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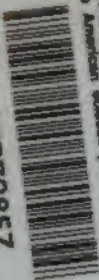
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BY

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ON THE

THEORY AND PRACTICE OF MEDICINE.

LECTURE XXXVIII.

LARYNGITIS: OR INFLAMMATION OF THE LARYNX.

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This form of inflammation, like most other inflammatory diseases, may with great propriety be divided into the *acute* and *chronic*. I shall consider first the *acute* form of laryngitis. This, when fully developed, is a distressing and rapid disease, especially if not promptly and appropriately treated. It is of rare occurrence, in its fully-developed form, unless complicated with affections of the trachea. I do not, however, propose to consider it in that connection, although it is very rare for either of these parts to be seriously involved without more or less disorder of the other; but I shall reserve the diseases of the trachea for a separate consideration.

Slight attacks of laryngitis are among the most common affections met with, and are recognized by a change in the sound of the voice, as well as by other symptoms of cold. The voice in some cases is only slightly altered, as indicated by hoarseness or partial suppression; while in other instances it is almost or entirely suppressed. I need scarcely inform you that the larynx is the organ of voice, and that affections of its lining membrane must always, according to the greater or less degree of its involvement, change, modulate, or wholly destroy the voice and impair the power of articulation. In mild forms of this disease, the irritation first shown in the larynx gradually extends down into the trachea and bronchial tubes, thus becomes diffused, and is shortly thrown off by expectoration. Such is the course of those common attacks of cold and influenza so often met with during the variable weather of winter and spring.

In many cases, however, the attack does not pass off so lightly, but frequently continues for some days and even weeks, developing symptoms of a more general character. In this event, an irritating cough, with little expectoration, except of glairy mucus, and some difficulty of breathing, will be found to exist, as well as a more decided alteration in the voice, amounting in some cases to great hoarseness, and in others to an inability to articulate louder than a whisper. Accompanying these cases of influenza, a slight febrile excitement and other symptoms of general disturbance are very common, though often so moderate as scarcely to attract attention. But careful observation will generally discover an accelerated pulse, some thirst, scanty and high colored urine, furred tongue, costive bowels, and usually a slight increase of the temperature of the body at night. These symptoms often continue for some days, and then decline with an increase of all the secretions previously disturbed, and especially a more free, opaque, and yellow mucous expectoration. This may occur spontaneously, or it may be brought about by the use of moderate and mild measures of an expectorant and aperient character.

But in the more grave form of laryngitis, involving both

the mucous and sub-cellular tissues connected with it, more general and important constitutional, and far more urgent and distressing local, symptoms are developed, and require far more prompt and efficient therapeutic measures. This modification is often preceded by a distinct chill, but shortly followed by a high grade of febrile reaction, and all the attendant symptoms of inflammatory disease. A distinct soreness will be felt in the larynx, extending often to the fauces and pharynx, and producing difficulty in swallowing; also hoarseness of the voice, with a distinct sensation of stricture or tightness, accompanied with a hoarse or stridulous cough, with which there is very little expectoration, and that of a clear and viscid character. Difficulty of breathing, in some instances amounting to a sense of suffocation, will be experienced, often accompanied with a prolonged wheezing inspiration, requiring considerable effort to accomplish it. Upon examining the throat with a scapula, the whole fauces will present a flushed or reddened appearance, while the epiglottis will be seen standing erect, exhibiting a bright red and swollen appearance. This is often the case to an extent sufficient to prevent the descent of the epiglottis to close the glottis, which is always necessary in the act of deglutition, as otherwise substances in the attempt to swallow would fall into the larynx and produce strangulation. Thus the act of deglutition becomes difficult, if not entirely obstructed, and the secretions from the surrounding parts are constantly trickling down through the glottis and producing cough and a sensation of strangling. These difficulties may be owing in part to the swelling which sometimes accompanies the disease in the tonsil glands and fauces, but more probably to the swelling in the epiglottis by which it is prevented from closing the glottis.

Together with these local symptoms, those of a general character present a severity somewhat proportioned to the extent and gravity of the local difficulty. The voice becomes more wheezing or entirely extinct; respiration more laborious and difficult; the cough a mere suppressed wheezing, accompanied with a painful effort and a sense of suffocation;

the skin is dry and increased in temperature; the pulse is frequent and full, tongue coated, bowels costive, and the urinary secretion scanty and high colored. While these symptoms are present, the patient is generally restless and uneasy, often changing his position, either walking about the room or having the doors and windows opened, with a view to obtain fresh air; and, if in bed, moving from side to side, frequently starting up suddenly, as if a new mode of obtaining relief had occurred to him, and after remaining a few moments in a sitting posture, lying down again.

As the disease progresses, he becomes more dull and drowsy, but is unable to sleep more than a few minutes at a time from the constant tendency to the accumulation of mucus in the throat, and the consequent necessity of coughing and expectorating. In this stage of the case, the force of the pulse begins to fail, the circulation becomes more feeble, and the blood in the vessels of the lips, face, and extremities begins to exhibit evidences of imperfect aëration. The lips exhibit a purplish color, and contrast strikingly with the sunken paleness of the face; while the eyes, encircled with the same livid hue, exhibit a staring, projected, and watery appearance. The extremities become cold, the pulse irregular and weak, the sufferings of the patient are increased by the exhausting efforts at a more full respiration, and these symptoms are soon followed by a cold sweat, failure of the pulse at the wrist, a drowsy and comatose condition, and he at length sinks into the arms of death with all the appearances of asphyxia.

I have thus endeavored to give you a short and concise description of laryngitis as it is usually met with, including the two modifications of the disease recognized by modern authors, to-wit: the most common and mild form, which is described as confined to the mucous membrane alone, and the more rare but far more severe modification, in which the sub-mucous and cellular membranes are involved and produce the embarrassments in the respiratory functions before described. I have not thought proper to recognize a third modification, to-wit: the pseudo-membranous, as I have

never yet met with that form except as connected with croup, which will hereafter be particularly discussed.

The *anatomical* developments are precisely what would naturally be expected. In cases that have proved suddenly fatal, there is merely an engorgement of the vessels, both in the mucous and submucous or cellular membranes, closing up the air passage. In some instances the swelling of the glottis is so extensive as nearly or entirely to fill up the chink of the glottis, and obstruct the passage, and the epiglottis becomes edematous and stiff, so that it cannot rise and fall. Bloody serum is sometimes effused through the cellular membrane, while the mucous membrane is highly inflamed and engorged with blood. In severe and protracted cases, an effusion of coagulable lymph is deposited in patches upon the mucous surface of the larynx. But the immediate cause of death in these cases is no doubt a physical impediment to the ingress of air through the larynx, and a consequent want of the necessary aëration of the blood, and the patient sinks into a state of asphyxia, with but little disorganization of the parts involved in the disease.

The *cause* of this form of disease, where a predisposition exists, may be exposure to cold. Sitting in a draft while the system is relaxed is perhaps one of the most common exciting causes, especially if the individual is in a perspiration. There are some persons who have a very striking and peculiar predisposition to inflammation of the larynx, owing to weakness of the parts, either hereditary or acquired. A very common predisposing influence is long continued public speaking, and hence we most generally find it among public speakers. The inhalation of ether or chloroform may be the exciting cause, and it is said to be produced sometimes by coming into contact with flames of fire, so as to inhale the heat. It is sometimes associated with tonsillitis, and I think I have seen two well defined cases growing out of scarlet fever. It is also occasionally associated with measles, the mucous membrane of the trachea and bronchial tubes being universally affected in this disease. So it has been known to result from mercurial inflammation of the mouth or salivation, and is

mentioned by some of the authorities as following mercurial disease. You will generally find it connected with or dependent on derangement of the stomach.

The *treatment* should be prompt and efficient in the severe form of laryngitis; but in the mild form first referred to very little treatment is required. Slight irritation over the throat will be useful in mild cases; or the patient, on going to bed, should apply to the throat a towel wrung out in cold water, and cover that with a flannel so as to increase the warmth and thereby favor evaporation. This will generally relieve the patient before morning. Or you may apply a mustard poultice over the part, and if the case is of some severity this may be followed by hot fomentations of hops covered with dry flannel. In connection with these local means you may administer the boneset syrup, and perhaps a mild aperient to act slightly on the bowels. The antidyspeptic pills or a seidlitz powder will usually be sufficient. Frequently the boneset syrup, together with friction on the throat with tinct. camphor, will answer. Of course the efficiency of the treatment should depend on the violence of the disease.

Perhaps there is no disease upon which there is greater unanimity in the books than in regard to the treatment of the early stage of this affection. Almost every author recommends bleeding, though as to the time at which this means should always be resorted to there is great diversity of opinion. Yet in view of the unqualified confidence with which this remedy is recommended by the authorities, we would naturally suppose that the results of practice would justify the theory. But what is the result? You may be surprised at the statement that not one half the cases of laryngitis treated by active depletion recover. Yet Tweedie, Vol. III, page 76, says: "Laryngitis has been considered by Dr. Cheyne and others to be the most fatal of all the inflammations. Of seventeen cases observed by Bayle during six years, only one recovered. Of twenty-eight cases collected from various authors by Mr. Ryland, ten recovered, which he justly considers to be above the average. In most of the fatal cases, death took place between the first and fifth days. The prognosis must

therefore in all cases be unfavorable; and the more so, as the disease has lasted longer and with progressive increase of the difficulty of breathing." Now in view of such admissions, the first suggestion to my mind is that the treatment is wrong. There may, indeed, be some diseases the half of which, after a certain stage, will necessarily prove fatal. And in fact the most simple disease that tends to prove fatal at all, after it passes the point at which the proper remedy can be relied on, will prove fatal, and it is so of laryngitis. Yet we are directed to resort to bleeding in laryngitis with no more positive instruction in regard to the remedy than a vague direction to apply it at some period in the early stage, and we are also told that when we do use it a majority of the cases will prove fatal. In the face of such results we find Tweedie endorsing the directions of Dr. Cheyne, who "recommends free blood-letting, but not to syncope, as advised by Dr. Baillie, for this may deprive the patient of strength sufficient to struggle against the next spasmodic paroxysm of dyspnea." And Tweedie further says: "Active depletory measures employed early may for a time relieve the symptoms without removing the inflammation; they often only delay the effusion, which with its resulting permanent increase of difficulty of breathing and appearance of lividity, instead of taking place in the first day, may not come on for several days." *

* * "Some few cases have yielded to bleeding alone, and its employment should never be neglected *when the strength can bear it.*" Wood also says: "In the violent cases described under the title of *sub-mucous laryngitis*, it is of the utmost importance to employ active remedies promptly. If postponed until the purple lips and livid paleness of the face indicate an insufficiently aerated blood, they will be of little avail. In the early stage, if not forbidden by the debility of the patient, blood should be taken very freely. In a robust adult from twenty to thirty ounces may be drawn at the first bleeding, and the operation repeated once or oftener if necessary. The loss of blood should stop short of syncope." Now, if "few cases" are benefited, and not one half recover in any event, does it not appear somewhat unreasonable to

persevere with a measure which must reduce the patient to a condition only short of syncope? There appears to me to be a total absence of true philosophy in such teachings, and our doctrine of the influence of blood-letting will apply here as in other inflammatory diseases, only perhaps with more force.

Dr. Armstrong mentions a case where the patient was bled 160 ounces within four hours, and notwithstanding this died! In another case, he says, the patient was bled to approaching syncope, and strange as it may appear the case proved fatal! Surely so potent a remedy ought to have saved him, or at least you ought to be quite sure that some little relief would be obtained before resorting to such a measure!—though in all seriousness I think we are justified in asserting that you might as well expect to save a man's life by cutting his throat. And what is really strange to me, is that sensible men have so long pursued this fatal course without discovering it to be such. I ask any one who has read the history of Washington's treatment, if he was not a victim of this practice? It was even said by the English that General Washington had fallen a victim to malpractice. And I ask any one to review the treatment pursued by the attendant physicians, and say whether the active depletion and the amount and kind of medication to which Washington was subjected would not have proved fatal at his time of life, even if he had been in perfect health? He took tartar emetic enough to have produced inflammation of the stomach and bowels, and in connection with that calomel and various expectorants were administered, until the venerable patriot besought them to let him die without further interruption, and he finally sank under the combined influence of the disease and the extraordinary treatment he had received, having been bled three or four times and having lost at least 75 or 80 ounces of blood in the short space of less than twenty-four hours.

In cases of this disease associated with derangement of the *stomach*, a thorough emetic will be necessary—not a single discharge, but a complete and thorough evacuation of the contents of the stomach. The influence of this measure in

equalizing the circulation and promoting the secretion of the mucous surfaces of the trachea and bronchial vessels is too well understood to require comment. Lobelia and sanguinaria, with a little boneset perhaps, is the remedy upon which I would mainly rely. The sanguinaria is decidedly sedative in its influence, and as an expectorant exercises a specific effect on the trachea and bronchial tubes. It should be continued until a full and free evacuation of the stomach is effected, and then followed by a thorough cathartic. Perhaps the antibilious physic and cream of tartar will answer as well as anything else. Its influence on the circulation as well as on the local inflammation will be sensibly realized.

Another local measure, not less important in violent cases, will be the application of cups to each side of the larynx. Objections have been made to the application of leeches in such cases, from the fact that their bites are sometimes followed by effusion, which is never the case where cups are used. Cupping exercises a revulsive influence in diverting the engorgement to the superficial vessels. This should be followed by a soft onion poultice applied to the throat once in two hours as hot as the patient can bear it. A general and free perspiration should be induced, and for this purpose you may give our diaphoretic powder or sudorific tincture; but perhaps the most efficient remedy is some narcotic preparation that does not lock up the secretions. Hyoscyamus and sanguinaria will answer a good purpose, and this should be assisted by mild diaphoretic teas, with the constant use of the sanguinaria and boneset syrup. These means should be repeated more or less frequently according to the urgency of the case; and especially the emetic.

The acetous tincture of sanguinaria and lobelia, as a substitute for the one already mentioned, given in tablespoonful doses with warm boneset tea, is a very valuable preparation, and should be administered every fifteen minutes, and repeated a number of times if necessary. By adding a sufficient quantity of loaf sugar to the acetous tincture you will have a very good expectorant syrup, which may be given in teaspoonful doses every fifteen or twenty minutes, as the

urgency of the case seems to demand. If the case proves obstinate and unyielding, the cupping should also be repeated every day, or oftener if necessary, and should be followed as before directed by the onion poultice, or a hot hop fomentation. The system should be kept more or less constantly under the moderate influence of mild and soothing anodyne antispasmodics, for which purpose small doses of sudorific tincture, or a pill of hyoscyamus and camphor may be given, the first in teaspoonful doses repeated once in two or three hours, as may be necessary, and the latter in doses of one to three grains each and repeated as circumstances may demand. In this as in all other inflammatory affections, the condition of the skin should receive particular attention. Frequent bathing in broke water and whisky will be found to exercise great influence on the febrile symptoms, and afford comfort to the patient by quieting the restlessness characteristic of this disease. This may be repeated once in two or three hours.

The *diet* in all these cases should be of a very simple farinaceous and fluid character, such as rice water, weak tea, etc., or an entire suspension of aliment would be beneficial, unless food is demanded.

CHRONIC LARYNGEAL DISEASE.

Chronic disease of the larynx is known by the common appellations of *chronic laryngitis*, *bronchitis*, or *minister's sore throat*, and, if not of modern origin, is at least of modern discovery, as it is only within the last twenty-five years that we have had any historical acquaintance with it. Whether the disease really had no previous existence may with great propriety be doubted, as we are not familiar with any peculiar circumstances in the history of the human race sufficient to account for its recent production. We are therefore led to suppose that all that can be claimed for it, in this regard, is a more familiar acquaintance with the symptoms it develops, and a more accurate knowledge of the condition of the organs upon which those symptoms depend.

About the year 1830, this affection attracted special

attention, as at that time there was a very general prevalence of an epidemic influenza, producing, no doubt, a disease of the mucous membrane of the air passages, and probably involving, to a greater or less extent, the mucous follicles or glands, thus creating a predisposition, or leaving an impress upon the system, favorable to the development of the particular affection, which has since been carefully studied and more fully understood. I am well convinced that this affection did exist long previous to the period from which its scientific history dates. For I well recollect, when but a boy, a number of instances in which individuals, greatly out of health, became aphonic, or lost the voice. Whatever the real disease, in one or two instances to which I refer it was solemnly believed that the infliction was a divine visitation for the violation of some law, and it was equally considered a providential interposition when the patients were restored. One case especially came under my notice which, though I am unable to express an opinion founded upon a close examination of the general symptoms, yet I am fully convinced, from the similarity of the symptoms which I did observe and now remember, was in reality identical with the disease I am now considering.

In discussing this subject, I desire to impress upon your minds the distinction between chronic inflammation and the condition of the parts involved in this affection. The mucous membrane of the larynx may be the seat of chronic inflammatory action resulting from the acute form, or following repeated attacks of cold. In such cases the diseased action will be confined to the mucous membrane proper, or to the sub-mucous and cellular structure of the larynx and adjacent or contiguous parts. But this form of disease is not very frequently observed, and when it does occur the appropriate treatment will not greatly differ from that which will be recommended for chronic disease of the larynx, to which, instead of chronic inflammation, I shall chiefly confine my remarks at this time.

This disorder is mainly located in the mucous follicles or glands of the mucous membrane of the throat. Nearly all

the mucous surfaces of the human body have appropriated to their use glands variously designated as glands, follicles, square patches, etc., the functions of which seem to be to afford a secretion necessary in some instances, perhaps, to protect the surfaces of the membrane from irritation likely to result from substances coming in contact with them, and mainly no doubt to eliminate the waste materials of the body and thereby keep up a healthy action of the system. The surface of the posterior fauces, the palatal arches, the uvula, the pillars of the fauces, and the tonsil glands, have large numbers of these mucous follicles or glands appropriated to their use. The same structures extend down into the pharynx, larynx proper, trachea, and bronchial tubes. It is these glands or follicles that are the special seat of the disease under consideration. A close examination will disclose a marked difference in the appearance of the throat in the two affections. In chronic inflammation the whole mucous membrane will be slightly swollen, and will present a diffused redness more or less purple or highly colored; while in this disease you will discover distinct patches of different shapes, sometimes striated and at others more conglomerated, of a rough and granulated appearance, the intervening spaces of the mucous membrane being smooth and healthy, or but slightly inflamed without much swelling. This appearance may extend in places over the whole throat, involving the uvula and palatine arches, and as far into the pharynx as you can see, or it may be confined to much less space, but will be more especially apparent on the posterior fauces. For the purpose of more clearly indicating the appearances of these diseased follicles, I will remark that the mucous membranes lining the air passages have, upon their inner surfaces, a very delicate and transparent epithelium, which, upon the occurrence of disease, is very liable to be removed, but is readily reproduced. This delicate covering or lining of the mucous surfaces is very analogous to the cuticle of the skin. The transparent covering of the true skin, when examined through a glass or microscope, is found to be made up of irregular, flattened cell-like scales, arranged

in part so as to overlap each other, the outer surface being dry and horny, while the inner surface is soft and granular, having its origin from nuclei on the surface of the membrane in contact with it. So the epithelium, or delicate covering or lining of the mucous membranes, appears to be made up of different-formed cells, in some situations and instances of a tessellated or pavement-like character, and in others of a cylindrical form, having something of a cone-like shape with its base or large extremity pointing to the surface. The two forms, however, are often found passing into each other and originate from the same nuclei on the surface of the "base-membrane." These cells, when arranged to form this delicate epithelial covering, have upon their free surfaces a kind of ciliary formation pointing in the direction of the outlet of the mucous membrane, and assisting in the more free elimination of the mucous secretions from this epithelial membrane and the mucous follicles. Thus it will be seen that the inner surfaces of the air passages and throat are lined with a smooth, soft, and continuous membrane, completely covering and hiding the follicles which are the seat of the disease under consideration, and liable, from slight diseased action, to be removed. In this affection the epithelial covering of the mucous glands is absorbed, and the exposed glands present the granulated and abraded appearance in irregular patches which I have before adverted to. Thus you will be enabled to recognize the disease.

It should be remarked in this connection that these follicles, when thus exposed, present in different cases considerable difference in size and appearance. Thus when the disease is brought on in scrofulous subjects by repeated attacks of colds, and is associated with general derangement of the system, they will be found much larger and more extensive, often containing a yellowish white substance resembling and probably identical with tuberculous matter. In other cases, the whole posterior fauces, pharynx, and tonsil glands will be covered with a yellowish adhesive mucus, and will present a granulated appearance in clusters throughout their whole extent.

Thus I have endeavored to give you a description of the local appearances of laryngeal disease, and also the difference between it and chronic inflammation proper of the larynx. The symptoms accompanying this affection are unique. It is a disease of a most insidious character, often making serious inroads upon the general health, as well as upon the parts involved, before the individual is apprised of its peculiarity or its danger. The first sensation that is recognized, when the individual is alive to abnormal action, is an uneasiness in the upper part of the throat, inclining him to more frequent swallowing or hawking up the increased mucous secretion. Very soon a slight change will be observed in the sound of the voice. A slight hoarseness will be noticed, accompanied often with an occasional pricking sensation, which will be felt upon any unusual effort. And in that case there will be some difficulty in contracting the vocal organs, which is liable to be increased toward evening. It is however not unfrequently the case that these symptoms are all slightly increased in the morning when the effort of speaking is first made, but most generally they are worse in the evening. The mucous secretion is generally more copious after eating, and often produces gagging and vomiting in the effort to dislodge and throw it off. There is very little coughing in the early stage of the disease, and frequently none at all; but when the uvula is involved and is greatly edematous and elongated, resting upon the base of the tongue or the side of the fauces, a dry hacking or tickling cough will exist. In some cases in this stage of the affection the symptoms all disappear, and the patient is apparently relieved; but upon taking a slight cold they all return somewhat aggravated.

Thus it may go on for some time, the symptoms disappearing and then returning, the patient meantime being in comparatively comfortable health, until the disease has made considerable progress and a physician is called. Gradually all the symptoms increase, and at length a severe and troublesome cough sets in, accompanied with a more free expectoration of matter which is at first frothy and transparent, but, if the disease extends into the bronchial glands, becomes opaque

and friable, resembling pus. It thus closely simulates in its progress the general symptoms of consumption, for which it is often mistaken. It may however degenerate into true phthisis, and thus furnish a finale to the case. In almost any stage of the disease, singing or public speaking aggravates the symptoms, and in advanced stages, owing to the exalted state of the sensibilities of the nerves which are distributed to the parts involved, is often productive of severe suffering. The nerves of the mucous membrane and muscles of the larynx are mainly derived from the superior and inferior laryngeal, pneumogastric branches of the par vagum, or eighth pair, forming an intimate relation with the stomach and lungs. These nervous ramifications often become the seat of exquisite sensibility, and occasion severe neuralgic pains.

As the disease progresses the voice becomes more rough, hoarse, and sometimes suppressed, or partially so. Sometimes the individual will be able to speak a sentence in an audible voice, while the next one will be in a whisper; or the audible articulation may be cut off in the midst of a single word, thus producing the discordant voice so characteristic of this disease. When, however, it is entirely confined to the mucous follicles, without involving the muscular structure of the vocal organs, the voice will be much less affected; but most generally the muscular structure becomes involved and the voice is changed.

In most of the severe and protracted cases, the general health, if not previously affected, becomes impaired. Digestion is imperfect, as shown by gaseous eructations, there is general uneasiness and tenderness in the epigastrium, a red tongue, and a variable appetite, which is often voracious, but more commonly wanting. In this condition of the digestive organs, torpor of the bowels occasionally exists, while later in the disease there is a debilitating and exhausting diarrhea. This complication of symptoms will soon be followed by a more serious involvement of the bronchial mucous membrane and substance of the lungs, with a low grade of irritation; and if the patient be of a scrofulous constitution, tuberculous deposits will be made in the pulmonary structure, and from

the predisposition to such deposits the local irritation invites a rapid accumulation, and the patient is hurried out of this life with all the symptoms of quick consumption.

Along with the symptoms I have described as more particularly diagnostic, those of a more common character rarely fail to make their appearance. The pulse gradually increases in frequency, and often becomes small and weak; the urine is highly colored, and as the disease progresses becomes less than in health; the skin gets dry and harsh, and is slightly increased in temperature upon the body, but is cool at the extremities, and there is often a clammy state of the hands; the tongue becomes red at the tip and edges, and there is a wasting of the flesh and general debility.

The most common exciting *cause* of this affection is exposure to atmospheric vicissitudes. The system is very liable to be affected if exposed to a draft of air or a change of temperature, when in a state of perspiration after an effort of speaking or singing. But among the exciting causes, none is perhaps so general and widespread as that of influenza. While it may act as an immediate cause of the laryngitis as it ordinarily occurs, it has without doubt been greatly instrumental in the more general prevalence of that disease, by its predisposing effect upon the laryngeal mucous follicles. Hence this affection has attracted more particular attention since the occurrence of that most memorable epidemic influenza of 1830. Another very common exciting and predisposing cause is found in the dyspeptic condition of the stomach attendant upon the habits of the clerical profession. In this condition, and the clergyman's daily or weekly habit of singing or speaking, we find conjoined the two most commonly exciting causes of chronic affections of the larynx, and hence the more frequent occurrence of this disease among clergymen. They are peculiarly liable to an attack after severe exercise of the vocal organs, especially if suddenly exposed to changes of temperature.

Common observation has very generally distinguished hereditary predisposition as one of the most powerful causes of this affection. Whether this predisposing condition is found

in the peculiar organization of the structures involved in the disease, or whether it is entirely owing to a scrofulous contamination of the system, is not very satisfactorily determined. The probabilities are that this predisposition may consist of either of these influences, or they may act conjointly. Climate may also exercise a predisposing as well as an exciting influence in the production of this disease. General debility, mental labor and anxiety are also considered among the predisposing causes, and within my own observation I have found a number of cases in which the only sufficient predisposing influence that could be ascertained was excessive venereal indulgence. And from the investigations I have given this subject, I am well convinced that the extent of this influence upon the system in general, and this affection in particular, has not been sufficiently appreciated, or at least has not been so fully discussed by systematic writers as its importance demands. In this remark I do not refer exclusively to those abuses connected with the venereal disease, but to those secret and solitary indulgences, which may at first be ignorantly practised, but often are wilfully indulged under the influence of a debasing appetite which grows by what it feeds upon. Nor do I refer to any particular class of community, but to very many in all classes of society, who are not sufficiently enlightened, and perhaps are culpably ignorant of the physiological laws of these particular functions.

Diagnosis. The peculiar local symptoms, and the appearances presented upon an examination of the throat which I have already described, are sufficient to insure a correct diagnosis of this affection. The only diseases with which it is in any way liable to be confounded, are chronic inflammation of the larynx and genuine phthisis. From the first it will be distinguished by the granulated appearance of the throat in this affection, which is usually seen in patches, without swelling or much disease in the intervening mucous membrane. It is also associated with genuine consumption, both as the cause and as an effect of that disease. But the history of the case, and the condition of the lungs, as shown by a careful physical exploration, will be the main reliance

in distinguishing the two diseases, and determining the relation they bear to each other.

Prognosis. The probable result of this affection depends upon the condition of the general system, upon the progress or stage of the disease, and upon its complications. Its connection with a cachectic or scrofulous condition of the system would render the result of a case doubtful and uncertain, more especially if it had advanced so as to involve the lungs and bronchial vessels. So also where extensive ulceration has taken place in the cellular structure, involving the cartilages of the larynx, the case may clearly be considered almost hopeless. But when but little complication is found to exist, and extensive disorganization has not occurred, the case may be looked upon, under appropriate treatment, as decidedly favorable. In view of all the complications with which the disease is usually found associated, in view also of the modern advances toward a correct knowledge of the disease, the perfect feasibility of entering the larynx for the purpose of local treatment, the present enlightened understanding of the pathology of the scrofulous diathesis, and the results of modern therapeutic appliances for correcting this state of the system, chronic disease of the larynx may be regarded as generally curable.

The *post mortem* developments will depend upon the complications connected with the disease in its progress. But all that is of interest in a practical point of view will be found in the larynx, or parts immediately associated with it. The lungs no doubt are involved more or less in most cases, and it is presumed, when examined, would present the ordinary phenomena of pulmonary disease. The larynx is found in different cases presenting varied states of disorganization, depending upon the complications that determined a more or less speedy and sudden fatal termination, varying from slight ulceration of the mucous follicles to deep seated disorganization of the cartilaginous and muscular structures of the larynx.

The *treatment* of chronic laryngeal disease may, with great propriety, be considered under two heads, to wit: *topical*

and *general*. To Dr. H. Green belongs the credit of having first promulgated in this country the practicability of making local applications to the inner surface of the larynx. And although it is concluded by the doctor himself that, in point of time, the discovery and application were first made by Drs. Trousseau and Belloc, yet Dr. Green claims to have made applications simultaneously in the same way, without knowing anything of the publication of the work of those authors. Whatever the claims to priority, or whatever inventive skill is due to Dr. Green in this respect, I have no hesitation in awarding to that author the credit of having disseminated the knowledge of this important practical measure at an early period in the history of its discovery, and also of having manifested commendable zeal in its promulgation, in the face of incredulity, and of stout denial as to its practicability on the part of gentlemen high in the honors of the profession, who, upon their professed minute anatomical knowledge, pronounced it a physical impossibility.

The most important local measure is unquestionably the application of a solution of the crystals of nitrate of silver. This should be made to the posterior fauces, tonsil glands, and down into the pharynx, for some days previous to an attempt to introduce it into the larynx. Two or three considerations dictate this course: first, by making the application to these parts prior to entering the larynx, you in some measure deprive the whole throat of that peculiar sensitiveness which usually accompanies these cases, and also quiet any apprehensions which patients are apt to feel in view of any applications of the kind. At the same time you educate the muscular organization of the throat to a more perfect expansion than is possible on the first effort.

It may be of some consequence for you to understand the particular mode of procedure in order to secure success in every instance. The application to the fauces can be made in almost any way; but the most convenient instrument for the purpose is a whalebone probang, with a much larger sponge fastened to the end of it than is used to enter the larynx. This is manufactured of all sizes by most makers of

surgeons' instruments. The probang consists of a whalebone of the average size of a goosequill, but larger at one end than the other, with about three inches of the small extremity bent at an obtuse angle of about fifty degrees, and a small sponge firmly attached to the smaller extremity. The sponge being saturated with the solution, can be applied with the aid of a flat steel instrument about an inch wide, sufficiently thick to be firm, and bent at right angles with one end about eight inches long for a handle, and the other four inches long with a longitudinal circular portion cut out of the center, for the purpose of more firmly and steadily securing the tongue when you desire. This instrument, called the scapula, applied to the top of the tongue with sufficient force, will depress it far enough to admit of seeing the edge of the epiglottis, as it stands erect in the act of expiration. The probang used for the purpose of entering the larynx should have a sponge attached not larger than a common sized kidney bean; when larger than that its introduction into the tube will often be difficult. But one three or four times as large is preferred for ordinary applications to the pharynx and fauces.

After the patient has been trained for a few days, by applying the larger sponge to the fauces and adjacent parts, and has become accustomed to a sufficient depression of the tongue, he should be seated before a door or window, for the purpose of allowing a complete view of the parts. The head may be held back by an assistant, but I prefer to have it rest on my knee, elevated by placing my foot in a chair immediately back of and of the same height with the one in which the patient sits. Depressing the tongue with the scapula just described, I introduce the sponge previously saturated in the solution. After opening the mouth and depressing the tongue, you will generally see the erect epiglottis upon the first movement of expiration, when the sponge should be passed above and beyond it, and slipped through the glottis into the larynx. The moment it enters the larynx, a spasm of the muscles diminishes the caliber of the tube, grasps the sponge, and presses out the solution. It is not therefore necessary to allow the sponge to remain, but you should re-

move it immediately after it is introduced. In this way, a sufficient amount of the solution is pressed out to pass down over the adjacent mucous membrane not reached with the sponge. Some benefit, no doubt, is derived from the mechanical swabbing of the throat, as the tenacious mucus covering it is wiped off. These applications should be made every other or every third day, at first, and afterward once a week, or once in two weeks, as the case may require.

I have in numerous instances derived great advantage from this application, in cases connected with bronchial consumption and affections of the trachea. Although it is not practicable to reach the bronchial bifurcation with the sponge, yet sufficient of the solution may be thus introduced to exert a very salutary influence upon the disease there located. Great benefit may also be derived from a similar application to the posterior nares, with a probang bent at right angles, and introduced through the mouth, back of the soft palate, so as to wipe off the nasal floor.

The strength of the solution proper to be used is a matter of some interest, as all cases do not require, nor will they bear, the same solution. From forty to one hundred and twenty grains of the crystals, to an ounce of pure rain or distilled water, may be considered the two extremes proper for general use. Some rare cases will not probably bear even the first to begin with, and it is equally probable that here and there a case may be found which will require a stronger solution than the latter.

The *elongated uvula* usually found in this affection, if dependent upon mere relaxation, and presenting an edematous condition of the extremity, will generally be relieved by a few applications of nitrate of silver in substance, which should be followed the next day after each application with a powder of burnt alum. But those cases presenting an indurated and greatly elongated appearance will rarely be permanently benefited by any application short of excision. This is a very simple operation, and void of danger in almost every case. It can be readily accomplished with the uvula scissors. These scissors, you are aware, have half an inch of the end of

one blade bent at right angles, and when the uvula is within the blade it cannot slip out, and can therefore be easily clipped off. Or it may be done with the common crooked scissors, after catching the end of the uvula with a pair of long forceps. I have not been in the practice of excising the entire uvula, but merely remove all that would be likely to be a source of irritation.

The same remarks will apply to affections of the *tonsil glands*, which are often associated with the disease under consideration. In those cases of chronic enlargement of the tonsil glands met with in children, I have not usually advised the process of extirpation, even though the cases indicated a scrofulous diathesis; but I have believed it best to trust for a removal of these morbid deposits, to a change of diathesis consequent upon a regulation of the habits during the development of the physical system. But when these chronic enlargements are complicated with a cachectic state of the system and chronic affections of the larynx, you can rarely expect the case to be benefited by local applications, and as they may have an important influence in perpetuating the laryngeal disease, it will not answer to await the slow process of change of diathesis for their disposal. The particular method to be preferred for their extirpation may be a mere matter of opinion. The common tonsil instruments, manufactured expressly for this operation, are (many of them) well adapted for this purpose. But I prefer the hooked forceps and long blunt bistoury, as with them you can see the precise extent of the incision. When performed with ordinary care, this operation is attended with little danger, but by cutting too deep there is danger of wounding the carotid artery, which of course should be guarded against. Whether it were determined to extirpate the glands or not, I have generally advised some revulsive application to the back of the neck, as many of these laryngeal affections are connected with, if not produced by, irritation located in the roots of the spinal nerves. I have witnessed the most satisfactory results from a long continued drain kept up at that point by the discharge from a caustic issue. It is a source of but little incon-

venience, and should be continued for a number of weeks or months, if necessary. Or if there are any objections to the issue, the same indication can be fulfilled, only to a less extent, by the application of the irritating tar plaster to the cervical vertebræ.

I have thus far confined my remarks upon the treatment of this affection to the consideration of purely local measures, regarding them as of the first importance for the suspension or removal of the exciting cause of the disease. Whatever efficiency may be anticipated or realized from these local measures, their effects must be transitory so long as the cause of the disease is allowed to remain in operation. Here, then, simultaneously with the local appliances just described, the cause should be at once attacked. If the patient is a public speaker or singer, his vocation or vocalization should at once be suspended, and his general health receive a full share of attention. If the local affection is associated with a sluggish state of the digestive organs, a coated tongue and no epigastric tenderness, it would be well to premise the administration of a gentle emetic. The acetous tincture of *sanguinaria* and *lobelia*, or the infusion of *lobelia* and *boneset*, as heretofore recommended, may be used for this purpose. In either case they should be administered till the desired action is produced, and it may be found desirable to repeat the emetic once or twice in the course of the treatment. But whether the emetic be administered or not, when there is inactivity of the digestive organs without irritation, and torpor of the bowels, our common gin or Bone's bitters will prove a valuable adjuvant in giving tone to the digestive organs, regulating the action of the bowels, and thereby favoring, to a very important degree, general restoration. If the liver should be slow in its secretions, a small quantity of *podophyllum* may be added to the bitters with a view to its cholagogue influence on that viscus; or the compound *faraxacum* pill may be given at the same time with the bitters, without the addition of the *podophyllum*.

But when indigestion is the principal and efficient cause of disease of the larynx, in which case a red tongue, epigastric

tenderness and an excited pulse will be perceived, a very different course will be distinctly indicated; and will be indispensably necessary. In such case all stimulants must be strictly avoided, and the bowels kept open by appropriate diet, such as has been already recommended for habitual constipation, or by the use of lavements; or in any event by the mildest and most unirritating aperient. But *if possible* the diet and lavements, with as much exercise in the open air as the patient can bear, should be preferred to medicine. In these cases little or no medicine should be used, except those very mild and simple tonics which experience has fully shown give tone to the stomach, without in the least adding to or continuing the local irritation. The infusion of *staphylea trifolia*, as proved by experience, possesses these properties to a very satisfactory degree, and its administration will generally be followed, in all cases where there is a red tongue and epigastric tenderness, by a diminution of these symptoms. When torpor of the liver is complicated with gastric irritation, and the means already suggested, together with such revulsive measures as have often heretofore been directed for a similar condition of these organs, have failed to restore a more free and healthy action of the hepatic functions, the compound taraxacum pill should be given, not as a purgative, but as a cholagogue. It may be thought that this remedy would be too active, or would add to the existing irritation of the mucous membrane of the stomach; but experience with it in many cases of a similar character amply disproves the suggestion.

In all these cases, a most important and efficient measure for giving tone to the general system is frequent bathing of the whole surface, as often heretofore recommended for chronic affections. It should be done at least once a day, over the entire surface, and followed or accompanied by brisk friction. The cold sponge or shower, or the tepid alkaline and whisky bath may be used, accordingly as either may appear to best suit the case.

The therapeutic and hygienic measures which I would advise for the treatment of those cases presenting undoubted

evidence of a scrofulous condition of the system, will be fully described when I come to speak of tuberculous affections.

If in any case you should detect indications of any of those abuses of organic laws heretofore referred to, the patient should be enlightened on the subject, and earnestly exhorted to avoid the abuse, whatever it may be.

The character of the diet will depend upon the condition of the patient, and will probably require to be changed in the same case at different stages of the treatment. As a general rule, plain and substantial articles of food should be prescribed, with special cautions against eating too much. When there is irritation of the stomach, a more simple and less stimulating diet will be required than in other cases, and should be farinaceous and easy of digestion.

Exercise in the open air, to an extent proportioned to the ability of the patient, will be indispensable.

LECTURE XXXIX.

CROUP — CYNANCHE TRACHEALIS — ANGINA TRACHEALIS—TRACHITIS—HIVES—BOLD HIVES.

General Remarks—Description of Croup—Three modifications: 1, Spasmodic; Symptoms—2, Inflammatory; Symptoms—3, Pseudo-membranous; Symptoms—Cases cited—Diagnosis—Anatomical relations — Quotation from Dr. Meigs — Cases cited — Quotations from Dr. Meigs and Dr. Wood.

These several terms have been used by different physicians and writers at different times to designate the same disease, and while the profession have been thus undetermined in relation to a significant appellation, the books do not exhibit much more agreement in regard to many leading points in its character and treatment. The most objectionable name, however, for this disease is *hives*, as that term has been appropriated by more general consent, to designate an ephemeral eruption frequently met with—an affection of a very different character known in the books by the name of *urticaria*—and therefore is improperly applied to a disease of the air passage and when so applied creates confusion. There is in fact no term now in use which, as applied to this affection, is either strictly expressive of its true character or fully indicative of its location. This is most apparent when you remember the different and frequently occurring modifications of the disease, and its complications with disorders of other parts. It is hence difficult to select any one term that shall at once indicate its locality and character. As however the disease in question is universally understood, both in and out of the profession, to be indicated by the conventional term—CROUP, I shall retain and employ that term, although it is etymologically expressive of nothing connected with the

disease, and is entirely arbitrary, unless indeed you may perceive some resemblance between the sound of the word and the cough so characteristic of the disease.

Croup, then, is an affection peculiar to childhood, rarely occurring after, but liable to be developed at almost any time prior to, the period of puberty, and generally diminishing in the frequency of its attacks in proportion to the proximity of the child's age to the latter period. The always distressing and sometimes almost heartrending scenes attendant upon its progress and especially upon its frequent fatality, have not and could not have failed to enlist the keenest sympathies of the warmhearted and conscientious practitioner, and induce a most careful and patient investigation of the subject. Having early in my experience encountered many cases which, up to a certain period of my practice, and in one of the modifications of the disease, proved uniformly fatal in spite of any course of treatment known to the profession—a fatality, so far as I could ascertain, common to other physicians who came in contact with that particular form of the disease—I was led to investigate the subject, both as to its nature and treatment, with more care and scrutiny than I have, perhaps, given to any other disease. I have without doubt profited greatly by these investigations into the phenomena and treatment of the disease, and perhaps you will permit me to say, in reference to my estimation of the value of the results obtained, that if I had but three years as the allotted limit of my professional career, and out of that time it was necessary for me to appropriate the full period of a term of medical lectures, with all the attendant labor and expense, for the purpose of acquiring the knowledge which I hope to impart to you on this subject, I should conceive myself amply rewarded by so doing.

I have already said that a diversity of opinion in regard to the character of croup prevails among the profession. Thus, most British authorities seem to recognize but one variety, and discuss the different modifications as if belonging to that variety, though they do also describe the spasmodic form, which they call spurious croup. With this view some of our

American writers agree with wonderful coincidence, yet while they appear to recognize but one essential form, they manifestly have not failed to observe and describe the various phenomena presented in the different conditions of the organs involved, though their symptomatology is lamentably confused. Many others of our authors, on the other hand, and Dr. Wood among the number, make two varieties, which they call the catarrhal and pseudo-membranous. But the division made by Dr. J. F. Meigs is the only one in my judgment that corresponds with the division of nature, and will stand the test of observation and experience. At the same time, while I most fully agree with Dr. Meigs in this fundamental point, I am forced to dissent from his definition and character of the pseudo-membranous modification, which I shall discuss more fully hereafter.

This affection, then, in a practical point of view, presents *three* distinct modifications which I will attempt to describe, namely: the spasmodic, answering to Dr. Wood's catarrhal, the inflammatory, answering to the simple or erythematous of Dr. Meigs, and the pseudo-membranous. I shall discuss them in the order here stated.

The *first* or *spasmodic* variety occurs mostly at night, generally late in the evening, but frequently before the older members of the family have retired, though it may no doubt occur at any time. In my experience, the first intimation of any indisposition, in most cases, is a sudden hoarse and ringing cough, frequently followed by the child's rising up in bed with a frightened and distressed appearance, the corners of the mouth being retracted, the eyes staring and projecting, and the patient apparently struggling for breath, which is at times partially interrupted by the effort to cough. For a few minutes the case exhibits indications of severe suffering without positive pain. In mild cases the spasmodic and perturbed symptoms gradually subside, without any other developments, and the little patient, becoming easy and quiet, drops into a gentle sleep, from which it awakes in the morning apparently free from disease with the exception of a slight hoarseness, the cough even having lost its characteristic sound.

But in more severe cases, after being roused up as before, the difficulty of breathing continues more or less for an hour or two, or even longer, aggravated at times, especially upon the recurrence of the cough. In some cases the child complains of a slight irritation in the throat, keeping up an almost constant inclination to cough, which is suppressed as much as possible on account of the sense of suffocation it produces. In all these cases the cough is always peculiarly rough, ringing, and dry, until the spasm begins to subside, when it is followed by a mucous secretion changing the cough to a moist or "rattle" sound. You will very often, on being called at night, perhaps just before, or shortly after, you may have gone to bed, find your patient in this condition. These attacks are generally slight and last but a short time. Yet occasionally a case may prove suddenly fatal from the spasmodic action of the muscles of the larynx, and in such cases the patient sinks into asphyxia from the continuous spasmodic constriction preventing the proper aëration of the blood so essential to life.

It will doubtless often happen to you, as it has to me, on being called to such cases, to find the little patient in its mother's lap, slightly oppressed but rapidly improving, and generally dropping to sleep by the time you have examined into the history and symptoms of the case. On waking up in the morning the child may not be entirely well, but will be so far improved as to require only a reasonable degree of care for its entire recovery without medication. Cases like this usually present a slight febrile state of the system, such as slightly increased heat and arterial action, which, however, generally pass off with the other symptoms. But in other cases, though the patient is thus relieved for that time, and continues apparently well through the next day, yet he may be afflicted, on the second and third nights, with a return of the same symptoms, more or less aggravated, according to the care and prudence employed in treating the case. The symptoms may again subside and the patient be comparatively well on the second and third days. To precisely such cases I have frequently been called, and have often, perhaps I

might say, generally found that care in diet and freedom from exposures was all that was necessary for their successful treatment.

In other cases you will detect a distinct periodical recurrence of symptoms which you will often find are dependent on malarial influence, and which will be promptly relieved by a course of medication adapted to that indication. In such cases, when I have found a recurrence of the symptoms, and was fully satisfied that the patient had been properly guarded in respect to diet and exposure, my rule has uniformly been to treat the case with antiperiodics. And as it is frequently difficult to determine whether the child has been prudently cared for—many parents thinking themselves careful when they are altogether otherwise—and as the course of medication indicated in such cases is safe and harmless, even though the disease may be kept up by local irritation, I have never hesitated to administer as in a case of well defined periodical character. If the case pursues, for one or two nights, the course before described, you will almost always detect a specific periodical influence, or else the return of the symptoms has been superinduced by over-eating or exposure. And in this way it may be merged in, and develop all the symptoms of, the inflammatory variety. This, however, I apprehend is rare, as I have no recollection of a case of the kind occurring in my practice.

In some cases the stridulous or barking cough continues through the day, without any other symptoms—not even a hoarseness, or the ordinary evidences of a cold, except what is manifest in the frequently recurring cough—or there may be more or less hoarseness, and a slightly excited pulse through the day, though not sufficient to mark the case as one of much importance. In these cases the tongue will usually be coated, the bowels somewhat inactive, the thirst slightly increased, and the appetite, though generally as good as usual, may be impaired. But in most other respects the case will exhibit few symptoms of disease, and the child will usually be found playing about as in health.

Sometimes the local symptoms are more continuous, the

exhausted and dies in a state of asphyxia, or possibly a violent fit of epileptic convulsions terminates the scene. More generally, however, an amelioration of the symptoms takes place at some stage of the disease, the cough becomes more loose, the respiration less hurried and oppressed, accompanied with a mucous râle, and thus all the symptoms gradually improve until the patient recovers. It also frequently happens that the early successive symptoms of coryza, laryngitis, and croup gradually give way, while the inflammatory action is diffused over the bronchial mucous membrane with the attendant change of symptoms, and in its several stages mucous secretion more or less free takes place until the extensive surfaces of the bronchial tubes afford a more ample field for capillary engorgement and thus weaken the phlogistic action, when nature with her wonderful recuperative energies comes to the rescue and relieves the case by an abundant secretion from the mucous surfaces involved.

But in some rare cases, the diffusive character of the inflammation does not stop with the bronchial mucous membrane, but passes on to the smaller air passages of the lungs, and perhaps to the parenchymous substance of those organs, and produces a well defined case, with all the general and local phenomena, of pneumonia proper. In this event the successive symptoms of catarrh, croup and bronchial irritation gradually give way, and the case is entirely metamorphosed, so that no suspicion would be had, at this stage, that any other symptoms had existed; and, indeed, in a practical point of view, it does not matter.

Upon examining the fauces, in this form of croup, I have uniformly found appearances of inflammatory action, though generally the fauces present a more pale red appearance than is characteristic of active inflammation. I have in a number of instances witnessed patches of a pseudo-membranous formation presenting a whitish appearance, and evidently composed of coagulated mucus, or coagulable lymph, or perhaps it was the mere deadened epithelium as we often see it in thrush or "nurse's sore mouth," but differing essentially from

difficulty of breathing,—to prevent the ingress of air into the lungs in sufficient quantities to supply an amount of oxygen indispensable for the proper aëration of the blood, without which the vital fluid becomes loaded with carbonaceous elements, and thereby unfit for the healthful purposes of the vital economy. The patient soon sinks into a profound coma—perfectly asphyxied as when submersed in water or confined to a vault of fixed air.

I by no means suppose that the commencement of this form of croup is necessarily confined to the larynx and trachea; for, although I have never observed it, yet I have no doubt it may first start in the fauces, and gradually extend into the larynx. It would seem, however, to have its origin more frequently, if not universally, at the point where it spends its force. To admit its occasional starting point from other places does not in the least compromise my views of the peculiarities of the disease.

Those who are unacquainted with the true nature and phenomena of this form of croup rarely or never suspect its insidious approach, and hence in most cases the obstruction becomes imminent, and the symptoms plain and unmistakable, before any treatment is considered necessary. But when families have become familiar with the disease, the first approach will be observed, and thus an opportunity afforded for careful observation from the first to the last stage. Such has been my advantage in a few cases. In one instance in particular, where the family had been cognizant of a case in the neighborhood, not long before, the approach of the disease was suspected at a very early period, and I was sent for while as yet the sole evidence of improper action in any part of the system could be recognized only by the child's cough, and by listening, in a still room, with the ear placed within a few inches of the child's neck. Then I could hear the peculiar but indescribable strictured sound of the laryngeal respiration, which, however, at the distance of a few feet was wholly inaudible. This local obstruction was, in this and all the other cases, at this stage and in fact to a much later period, the only evidence of disturbance any where to be discovered.

act of expiration as well as of inspiration. As the obstruction becomes more complete, and especially if the case has been protracted, the expiratory sound is occasionally associated, during the strongest efforts, with a kind of fluttering sound, as though the lower extremity of the membrane had become detached and was lying loose, and yielded the sound by the action of the breath upon it. That this is the true explanation of the phenomenon was confirmed to my mind by the post mortem appearances in a case where this peculiar sound was recognized. It is stated by the authorities that the entire membrane, in the form of a complete tube, has been in several instances thrown off by vomiting or severe coughing. I have in some cases upon post mortem investigation found it detached in several places though still entire, and in one case of a very protracted character, though ultimately proving fatal, I found it remaining in patches, the other parts having been softened up and discharged.

As before intimated, I never met with a case of indisputable membranous croup which exhibited any marks of general or constitutional disturbance until after the local obstruction had affected the blood, and thereby brought the rest of the system into sympathetic relation. But at a late stage of the case I have found an excited, but generally small, and frequently irregular pulse, with perhaps considerable warmth, or an undue heat of the skin on the body, while the extremities have been below the natural standard, and the rest of the general symptoms have corresponded with the perturbation produced by the obstruction and by its influence on the blood. In this stage the little sufferer always becomes extremely restless and uneasy, often changing its position, going from its mother to the nurse, from her to some one else or back to its mother, or perhaps onto the bed or into the crib, first lying up over the shoulder and down again on the lap, with its head thrown back, intimating its desires only by its movements, looks or motions, as the voice is perfectly muffled or entirely suppressed; the circulation meantime showing increased evidence of carbonaceous accumulations and producing a state of

The inflammatory form is far more gradual in its approach ; is associated with well defined symptoms of a " cold " and catarrh, develops at an early period unquestionable inflammatory appearances, with all the ordinary symptoms of general and constitutional derangement, and is liable to produce inflammation of contiguous structures.

The pseudo-membranous form is marked by the *absence* of constitutional disturbance and evidences of inflammatory action ; by a persistent, unabated and uniform strictured sound of the laryngeal respiration, which varies only by being slightly increased upon any exertion ; by an early loss of voice, and the change of cough from the proper croupal sound to a mere wheeze, or suppressed whistle, or muffled sound

Dr. Meigs says the spasmodic form " begins with coryza and hoarseness ; or *more frequently* by a sudden attack of suffocation in the night ; fauces natural, or merely slight redness as in simple angina. After the paroxysm the child seems well, the fever disappears or is very slight ; voice natural, or only slightly hoarse, not whispering. If the paroxysm returns, it is during the following night, and is less severe ; the hoarseness disappears ; the cough becomes loose and catarrhal. Duration seldom more than three days."

In his diagnosis of the inflammatory form, Dr. Meigs remarks : " Though the diagnosis is difficult, it can generally be made out with considerable certainty by attention to the following points : the pseudo-membranous form of the disease is often preceded or accompanied by the presence of false membranes in the fauces, which is not the case in simple laryngitis ; the symptoms of invasion of the former disease are less acute than those of the latter, the fever being less violent, and the restlessness and irritability less marked, than is usual in the simple affection, in which the *general symptoms* are severe from the first. The hoarseness of the voice and the cough follow a different course in the two diseases ; the progress of these symptoms being slow and gradual in the membranous, and much more rapid in the simple form. The fever is violent throughout the attack in the simple

were in nowise pathognomonic of the laryngeal affection.

Says Dr. Meigs: "The anatomical alterations may consist of simple inflammation of the mucous membrane, with its *various effects*, or of the same changes in connection with ulceration. The latter class of lesions is almost always confined to secondary cases. In the former class, (acute), the mucous membrane varies in color between a deep rose and violet red, which may be either uniform or only in patches. In severer cases the tissue is at the same time softened, or roughened, and sometimes thickened. When redness, softening and thickening are present, the disease is generally confined to certain parts, and usually to the epiglottis and internal portions of the vocal cords; but when redness alone exists, it generally affects the whole of the larynx and sometimes extends to the trachea."

In describing the anatomical relations of the pseudo-membranous form, I am prepared to speak from more extensive personal observation, as I have made post mortem examinations of most of the cases which have proved fatal in my practice. In *all* these I found so striking a similarity in the appearance of all the structures liable to be involved, and the morbid alterations so nearly corresponded with the phenomena of the disease during life, that it was difficult to avoid the conclusion that the coincidence was not accidental, but bore the relation of cause and effect. I may here be permitted to say, that this conclusion was not one which I sought, but was the result of observations made at a time when, so far as I was aware, the only view of the associated conditions that had been entertained or had ever been promulgated was that croup was an active inflammatory affection. The pseudo-membranous formations presented somewhat different appearances in several of the cases which I examined, which were plainly referable, however, to the difference in the length of time which the formations had existed. In one case that lingered for twelve days with alternate prospects of favorable and fatal termination, the membrane had softened up and been discharged in patches, leaving the larynx and trachea

and the morbid appearances indicated no more inflammatory action than I have described.

I propose now to read to you one or two extracts from the books, by way of confirming the correctness of my observations in this form of the disease. Dr. Meigs says, "the false membrane is generally of a yellowish white color, and from a fifth of a line to a line in thickness. Its consistence is generally considerable, and it is usually somewhat elastic. The free surface is usually covered with puriform mucus, while the inner surface is adherent with various degrees of force to the mucous membrane beneath. * * * * The mucous membrane presents various shades of redness, or is violet colored, or even blackish. In other cases it retains its normal characters—a circumstance which has given rise to the opinion entertained by some persons that the disease is not inflammatory, though it is altogether probable that this condition is consecutive to the formation of the exudation."

Here I would ask, where are the symptoms of inflammatory action prior to the exudation, if that occurrence relieves it? All the cases that came under my observation had no febrile symptoms and no indications of any inflammatory action until after there were unequivocal evidences that extensive exudation had taken place, and the subsequent post mortem investigations confirmed this opinion.

Dr. Wood says: "Where the deposit is removed, the mucous membrane beneath it, though sometimes quite healthy in appearance and seldom exhibiting the marks of severe inflammation, is commonly reddened, either partially or generally; and the red points or streaks correspond with those upon the separated surface of the false membrane." How does this correspond with the description which the same author gives of the appearances, on dissection, of the inflammatory modification of croup? "Dissection," says Dr. W., "exhibits redness of the mucous membrane of the larynx, trachea and bronchia, either in patches or continuons, with occasional swelling of the sub-mucous tissue from inflammatory infiltration." But, if exudation and the formation of this deciduous deposit can exist in one or a number of cases

LECTURE XL.

CROUP—CONTINUED.

Peculiar views explained—Causes of Croup—Prognosis—Treatment—Of spasmodic Croup—Of the inflammatory form—Of pseudo-membranous—Cases cited—Strictures on certain modes of treatment.

Your attention was called in my last lecture to the consideration of the symptoms and anatomical relations of the different modifications of croup. In the present lecture I propose to pursue the same general course, and discuss each variety in succession and in the order thus far followed. You will have observed, however, that my view of some of the peculiarities of this disease differs, in some points, from that usually set forth in the books; and before entering upon the further discussion of the general subject it may be thought incumbent upon me to present a more full explanation of the grounds of this difference, and a further exposition of my views of the distinctive character or peculiar features of the different modifications.

I therefore now address myself to that topic, and have first to remark that I was led early in my practice, by the truthful presentations of nature, primarily to suspect, and afterward to dissent from, the symptomatology of the books. I have heretofore intimated the particular motive impelling me to this course, and I now add, that for several years after I had observed and pointed out the characteristics which I have set forth in the last lecture, no publication fell in my way which approximated nearer to my views than Dr. Wood's chapter on this subject in his Theory and Practice. And it was not until within a year or two past that the work of any author, whose observations nearly corresponded with my own, has

of interesting members of the human family depend. Is pseudo-membranous croup inflammatory? That is the great question, the negative of which I take without hesitation, and appeal to the whole phenomena of the disease to support my position. If I am not mistaken, Dr. Meigs takes the affirmative, and apparently regards it as inflammatory without seeming to remember or reflect that he finds another modification presenting the phenomena of acute inflammation. The question is pertinent, why, if it is inflammatory, does a membranous exudation occur in this form and not in that which is admitted to be inflammatory, yet in which this peculiar formation has never been found? And why is there a total absence of any indication of the existence of inflammatory action, both in the symptoms developed during life and in the appearances upon dissection? I take it therefore that the true condition cannot be that of inflammation, but a high grade of irritation confined to the capillary vessels in contact with the basement membrane and epithelial surface of the mucous membrane. And the pseudo-membrane does not result from a natural secretion of mucus, nor from the effusion of coagulable lymph, such as commonly flows from inflamed surfaces and forms the uniting medium between opposing surfaces of serous membranes. But it is an exomose of albumen through the relaxed, irritated and engorged capillary vessels, which ordinarily contribute to the growth of the epithelial cells, so rapidly reproduced, when removed by absorption, in cases of chronic disease of such surfaces. This conclusion is supported by the following facts:

1st. The pseudo-membrane cannot be coagulable lymph, because the most careful microscopic observations have not detected that peculiar organization in the structure of the former which is always present in the latter, when thus concrete; and moreover, the color of the former materially differs from coagulated lymph.

2d. The exudation of a large amount of albumen is rendered possible, and more probable than that of any other element similar to it, or capable of forming the structure in question, from the fact that this form of croup generally

part perhaps by absorption. As long as the irritation continues, the exudation will be found to increase and thus add to the obstruction and difficulty of breathing.

In concluding this discussion I will add, that if I have correctly apprehended Dr. Meigs' description of the pseudo-membranous modification of croup, I am forcibly impressed with the conviction that when that learned author shall have critically reviewed his observations, and carefully reëxamined the phenomena presented by that variety, his views will more perfectly harmonize with those which I have thus endeavored to present. As it is, he certainly deserves the credit of having departed from the beaten track, and of having done much to clear up the confusion which existed by systematizing the mass of facts which had been observed; for you will hardly have failed to notice that there is no little confusion in most of the books on this subject. True, all the phenomena have been very correctly observed and reported by most writers, but without making the proper distinctions, and assigning the several symptoms to their proper modifications. And thus it has happened, doubtless, that different authors, following the lead of their predecessors, have taken it for granted that *croup* was CROUP—an unfortunate assumption, for, involving as it did an indiscriminating symptomatology, it has led in thousands of cases to an equally indiscriminating, inappropriate and fatal mode of treatment.

Causes. The generally admitted exciting cause of every modification of croup is atmospheric vicissitude, or the application of irritating substances to the mucous membrane of the larynx and trachea; yet it must be conceded that something more than a mere change in temperature is necessary to be considered in searching for the cause of the disease, for it is well known that it will prevail in particular localities, while other places equally subject to thermometric change are free from it; and it is also known that it sometimes prevails to an extent sufficient to give it the character of an endemic in locations where atmospheric change is neither extreme nor very sudden. This peculiarity can be accounted for by the fact, that the hydrometrical state of the atmosphere

system at this age which renders it susceptible to the influences supposed to be immediately productive of croup? The general explanation, and probably the only reasonable one that can be offered, is found in the anatomical relations of the parts involved at different periods of life. The vocal organs are very well known to undergo a change corresponding in some respects to the modifications of the voice which take place at about the age of puberty. This physiological change is no doubt partly owing to the development of the vocal apparatus, which, by increasing the size, lessens its susceptibility to obstruction. Yet when we consider what an immense change of the voice can be produced by the slightest elongation of the vocal cords, it is difficult to believe that the mere enlargement is the only circumstance influencing exemptions from this affection. I have therefore little doubt that the great susceptibility to morbid impressions, which is peculiarly characteristic of infancy, has much to do in the more frequent development of this disease, as it undoubtedly has in many other disorders.

Sex also is supposed to have some influence in the production of croup, as its occurrence has been more frequently observed among males than females; but why males are more susceptible it is difficult to determine, unless the greater nervous excitability characteristic of females in after life is equally so at this earlier period.

Epidemic influences no doubt have an important agency in the production of croup, and especially when the prevailing epidemic tends to involve the respiratory organs. So also other diseases, involving the mucous membrane of the fauces and air passages, are liable to become complicated with croup; such as measles, whooping cough, and scarlet fever, a few instances of which I have met in my own practice.

Prognosis. There is no disease the results of which so much depend upon its modifications as croup. Thus, while perhaps not one in five hundred cases of the spasmodic form would prove fatal under appropriate treatment, or possibly no treatment at all aside from proper care in diet, etc., not one fourth, nor scarcely a tenth of the genuine pseudo-mem-

contact with my own system, and, applying the palmer surface of my hand over the anterior part of the throat, thereby covering the whole larynx and trachea, hold it until a burning sensation was felt in the hand. Before the hand was removed a gentle moisture would appear upon the surface, and the child, usually soon dropping to sleep, would continue quiet until morning. On awaking he generally had a loose but slightly stridulous cough, and all that was then necessary was merely to keep him throughout the day in a room of uniform temperature, restrict him to a diet of rice or crackers and tea, and use an injection if his bowels required it. In domestic practice a very popular remedy is a mixture of New Orleans molasses and goose oil or lard, warmed sufficiently to mix well, and given in dessertspoonful doses. I have known this to be used in many families with entire success. I have not supposed it possessed very efficient properties, but as it took the place of what might otherwise have been not so harmless drug treatment, I have rather encouraged its use, with the qualification that it should not be relied upon if the patient were not soon found improving.

But more obstinate cases, presenting symptoms of a more severe character, will require the use of less doubtful means. The acetous tincture of sanguinaria and lobelia, either previously prepared as a tincture, or made off-hand by steeping for a few minutes two drachms of each in half a gill of vinegar, then straining and adding loaf sugar sufficient to make a syrup, given in teaspoonful doses to a child two years old, varying the dose according to its effect and the age of the child, and repeated every hour or half hour, or not so often if the symptoms are not urgent, will be found very efficient in relieving the irritation and removing the spasm. After its relaxing and antispasmodic influence is realized and the cough becomes loose, the dose may be increased with a view of producing its emetic action; or the acetous tincture, diluted with water and only slightly sweetened, may be given in suitable doses, and repeated every ten or fifteen minutes, until free vomiting is produced. After a few hours the vomiting may be repeated if necessary, but meantime the

great care and circumspection. If, after the first paroxysm is relieved with or without medicine, and the proper care has been used, both as regards exposure and diet, a recurrence of a similar attack takes place, I have for many years been in the habit of regarding such cases as modifications of malarial disease, or at least as essentially influenced by the miasm so prevalent in almost every section of our western valleys. In these cases, whatever may be thought advisable for the relief of the second paroxysm, I never hesitate, immediately after the urgent symptoms have been relieved, to commence the administration of antiperiodic measures in liberal doses, with a view to prevent the recurrence of a third attack.

The inflammatory modification of croup when fully developed presents a condition of the system indicative of more prompt and efficient action than is advisable or necessary in the spasmodic form, and it will scarcely be safe to wait the uncertain and doubtful influence of local applications, however beneficial in connection with other more efficient measures, as by so doing you may jeopard the life of your patient. The indications to be fulfilled in this form are to equalize the circulation and thereby subdue the local inflammatory action producing the obstruction. Cases of this form present evidences of more general derangement; such as a white and thickly coated tongue, high febrile symptoms, and all the appearances of extensive local inflammation, causing serious obstruction in the trachea and larynx. It is very true that different cases present different degrees of violence, and as a matter of course will require modes of treatment varying in efficiency and activity. It will generally be necessary to commence with a gentle emetic for the purpose of removing any accumulations in the stomach—the presence of which is generally indicated by the appearance of the tongue—and thereby prepare the system for the better effect of the subsequent measures, and also for the purpose of exercising an important influence upon the general circulation. I have often found better and more lasting effects from the action of the emetic by premising for an hour or two the administration of nauseating doses—such as the syrup of sanguinaria and

accordingly applied it, and drawing very carefully at first I succeeded in producing a sufficient vacuum in the cup to answer the purpose, and after scarifying I drew probably from half an ounce to an ounce of blood. I continued the cupping for half an hour or more, and the child meantime becoming more easy and breathing more freely, finally dropped into a quiet sleep, and with the use of other simple means ultimately recovered. Having tried this measure in many subsequent cases with entire success, or decided benefit, I do not hesitate to recommend it with the utmost confidence.

The beneficial effects of bathing the whole surface in broke water and whisky cannot be fully appreciated by any physician who has not witnessed its soothing and quieting influence in inflammatory diseases. As a means of allaying febrile excitement and subduing inflammatory action it cannot be too strongly recommended, and should never be neglected in cases of croup. It will frequently be no less important, when the head is hot and the feet inclined to be cold, to bathe the feet in mustard water. In such cases it will materially assist in equalizing the circulation to wrap up the entire feet and ankles in wilted and rolled horse-radish leaves, being careful, however, not to allow them to remain long enough to draw blisters—an occurrence always in such cases to be deprecated. If these cannot be borne, the common burdock leaves, on account of their rough surfaces, form a very good revulsive application for a similar purpose. Meantime the hot hop fomentation should be continued, changing more or less frequently as the difficulty of breathing may seem to render desirable.

In obstinate cases the repetition of the emetic for a number of times will frequently be indispensably necessary. In some instances I have in the first twenty-four hours given three or four moderately active emetics as the only apparent means of preventing the impending suffocation. The guide in the use of emetics should be the degree of obstruction and difficulty of respiration which characterize the case. But you should not torture your patient by administering them for the purpose of finding the traditional “nest egg” which, by some

more uncertain than that of either of the other varieties ; but whether or not subsequent experience shall fully confirm the efficacy of the measures which I am about to describe, and which have proved eminently successful in my practice and in the practice of those physicians who have tested them, I have no hesitation in saying that far more favorable effects may be anticipated from them than, so far as I am aware, have ever resulted from any other course hitherto used or recommended. I do not, gentlemen, desire to exaggerate, nor to recommend more strongly than facts justify. I predicate these strong assertions upon many years' experience with the "heroic" mode of treatment, in the first place, and latterly with the more mild and gentle course ; and while I am pained to say that I have never yet seen a case recover under the former course, either in my own practice or that of any other physician, where the case was a well defined and unmistakable one of pseudo-membranous croup, I am happy to say that, with the latter course, not one case has proved fatal out of six or seven equally well defined, and which with my former experience I should have had no hesitation in pronouncing wholly incurable. I can scarcely hope that future experience will bring forth such triumphant success in a disease which has always been dreaded by the profession ; but I have an abiding faith that this course will, if carefully and efficiently pursued, be attended with a success equal to if not greater than that obtained in most severe affections.

Under the erroneous impression that inflammatory action had to be subdued before the deciduous formation could be expelled or its further increase arrested, I formerly pursued, in common with the most approved authorities, a most thorough and efficient heroic course of medication for the purpose of fulfilling the supposed indication. Active emetics, cathartics no less thorough, expectorants and antispasmodics of various kinds, and cupping, were administered in various doses and degrees to suit the constitutional peculiarities of the different cases, but, so far as I was able to judge, without producing any favorable change on the symptoms of the disease, or in the least staying its onward course to a

patient became used to it. In this case, as in all others of the kind, I exhausted the air from the cups with my mouth, by which means the force of the draft could be easily regulated. The quantity of blood obtained was small, but the long continued cupping produced an external local engorgement, which no doubt relieved the internal sanguineous accumulation, and thereby tended directly to change the current of the circulation. The cupping was repeated twice a day for two or three days in the same way. Immediately on completing this operation, I had the mother apply to the throat a very soft onion poultice which she had prepared at my request while I was cupping, and I directed this to be applied as warm as the patient could bear it once every hour and a half or two hours through the whole twenty-four. To secure a strict compliance with this prescription, I directed that two or three good sized onions should be constantly kept in the fire, and when fully roasted to be mashed soft and applied directly to the whole anterior part of the throat.

The only medicine I had determined to administer internally was a syrup of sanguinaria, prepared by steeping three drachms of the pulverized root in a common sized teacupful of vinegar, and adding, after being strained, sufficient loaf sugar to make a syrup as thick as common New Orleans molasses. It should be given to a child in teaspoonful doses every hour; but if that quantity should appear to produce considerable nausea the dose should be diminished, and this was most strictly enjoined if the child should show any tendency to vomit, as that was particularly to be avoided. When the medicine was objected to by the child, I have in a number of cases had the syrup boiled long enough to make candy, in which less offensive form the child would be allowed to eat it in appropriate quantities. Having also observed that a moist atmosphere always produced an aggravation of the symptoms, I considered it highly important to keep the temperature as dry as possible and at a moderately high range. And withal the patient was directed to be kept as quiet as practicable, as I had noticed that excitement of any kind always increased the difficulty of breathing.

in the larynx, will be fully appreciated only by those who have been accustomed to use this extremely valuable agent, and have watched its effects upon the diseased system. And although I have no *certain* evidence that the vinegar of sanguinaria exerts any more decided or specific influence on the pseudo-membranous formation than the common syrup would do, yet the known solubility of coagulated albumen in acetic acid is, to say the least, suggestive of more important influences than could be expected of the common preparation of sanguinaria; and as the cases treated with this preparation have recovered with unparalleled uniformity, I submit whether it is an unphilosophical suggestion. The object of the soft warm onion poultice was to keep up a soothing antispasmodic influence upon the sentient nervous extremities of the parts to which it was applied, and thus communicate a favorable impression to the tissues immediately involved.

Having been led to analyze carefully the influence of the heroic measures generally recommended by the authorities, I believe the repeated opportunities afforded by my experience to observe their effects have enabled me to discuss and estimate them with a degree of certainty and satisfaction not always attained in the discussion of similar propositions; and I therefore submit a few general remarks upon the subject by way of conclusion.

If I have not shown in the discussion of the general subject of inflammation that blood-letting is unphilosophical as a therapeutic agent in the treatment of inflammatory diseases, yet the concurrent testimony of most modern authors, who have pretty generally discarded the lancet in this form of croup, renders it unnecessary that I should particularly discuss that subject. If this modification of croup is really inflammatory in its nature, why should they thus discard a remedy which a large number of the profession hold in the first rank in the treatment of inflammatory affections? I think the point needs no further discussion.

Why administer emetics? If the affection is unconnected with general disturbance of the system, instead of a beneficial influence upon the local irritation, what can we expect

perturbating measures, which in no instance within my knowledge resulted in the cure of the patient; is it a matter of surprise that all confidence in them should have been destroyed? I again repeat, that I know of no measures better calculated to fulfill the indications which the nature of the disease so clearly points out than those which I have recommended. At the same time I will add, that I would most cheerfully hail the discovery of any other remedies which would prove more efficient or even equally successful.

A few words in conclusion in reference to an appearance of what is called a pseudo-membrane upon the fauces, uvula and tonsils, mentioned in the books. I have in a number of instances recognized what I have no doubt was the membrane referred to; but it presented no appearance which indicated its identity with the pseudo-membrane of croup. It more closely resembled the appearance of deadened epithelium often seen in thrush. Although I have frequently seen this membranous or deadened epithelial formation in the inflammatory modifications of angina, I have never discovered its existence in the disease we have been considering.

position is proper it will materially aid the examination, and render the results more clear and satisfactory. The most easy and appropriate position is a sitting or an erect posture. When circumstances do not otherwise interfere, for the purpose of a more satisfactory insight into the minute evidences connected with the case, it will be best to have the patient's entire chest exposed. In this way the physician can more correctly compare the relative proportions of its different parts, as well as obviate all embarrassments attendant upon the rustling of clothes on the patient's body and the instruments used in the operation. By this means, also, the operator has the advantage of those evidences growing out of the application of the flat hand on any part desired. It becomes also an important consideration to know what the normal conditions of the two portions of the chest are, both anteriorly and posteriorly, to fully appreciate in what the diseased condition consists. Any considerable deviation from the ordinary symmetry of those parts, or any special disproportion between the right and left side, either in front or on the back, should lead to the suspicion that diseased action had existed, if indeed it was not then to be found. There is no special standard or positive size by which, in this investigation, you can be governed; but any marked deviation from the known relative proportions of different parts of the chest, and also between it and the rest of the system, is clearly indicative of an unnatural condition, and will justify a careful and scrutinizing investigation. It may be remarked, however, that this entirely denuded state of the patient may not be expected or urged in all cases, since the delicacy of females under certain circumstances will reasonably bar such an exposure. But in any event a single thin substance only should interpose, as any thing else would offer a material impediment to a minute appreciation of those phenomena connected with disease. Nor will it always be possible that every patient can thus be examined in a sitting posture. Next, however, to this position, the one most favorable to a full elicitation of the important symptoms is that of lying upon the back, when the anterior portion of the chest is to be examined. Another

spongy lung, affords upon percussion a distinct and resonant sound, essentially different from what it would were its contents of a more solid nature.

In making these investigations of the chest, it is of importance to consider, not only the parts upon which the examination is made, but also the particular physical conformation of the individual examined. For a person whose surface is thickly covered with a dense adipose structure, will afford a sound far more dull or less resonant than another of spare make, and a person advanced in life will afford a more clear and resonant sound than will be found in childhood or younger persons. So also it should be remembered that different portions of the chest when examined afford a very different degree of resonance in the same individual. An artificial division of the thorax has therefore been made, which you will find in most modern authors, supposed to facilitate the successful teaching of this branch of the subject. But for my own part, I have failed to discover anything but embarrassment from these divisions, and hence shall not trouble you with them. Still, it is important you should bear this fact in mind, and always make a careful comparison of both sides of the chest, and of different corresponding parts of the thorax. One other fact of some consequence you will do well to remember in this connection, lest you may sometimes be misled. It is the difference of sound elicited by percussion during inspiration and expiration. The sound is more resonant during the former than the latter, and hence care in this respect should be observed.

The particular manner to be preferred in making *percussion* is worthy of a single remark. Many persons apply to the chest with one hand a thin smooth plate of some hard substance, as ivory, called a *pleximeter*, upon which they strike with the ends of the fingers of the other hand; while others, and myself among the number, find one or two fingers laid flat upon the chest a good substitute for the pleximeter, and far more convenient and equally satisfactory. The terms *Immediate* and *Mediate* percussion you will find often used in your books. The former is used when nothing is inter-

particular cause of it may be is somewhat difficult to determine, though it probably arises to a great extent from the friction against the walls of the minute cells, produced by their sudden inflation. The vesicular sound, or respiratory murmur, as it is frequently called, will usually be heard during inspiration, over all parts of the chest, or wherever the lungs come in contact with its walls; but during expiration it will frequently require much experience and tact to detect it. It is somewhat difficult to describe this peculiar sound with accuracy to an unschooled ear, or to find anything with which to compare it. It is a soft diffusible murmur, or breezy sound, much like the rustling of the air through the leaves of a tree—gradually increasing from the commencement of inspiration until near the close of that act, when it subsides, and again becomes apparent during expiration, though more feeble. But since your own observation and experience are so necessary in order to become familiar with this sound, I will make no farther effort to describe it; enough having been said to guide your ear to its detection. You should, however, remark that it will be found very different in different individuals, and in different parts of the chest. In children it is quite loud and apparent, and has in consequence received the technical name of *puerile*; whilst in old and debilitated persons, it is much less distinct, and is styled *senile*. In those individuals in whom it is not easily recognized, it will become very apparent by directing the patient to take a full and slow inspiration.

The *bronchial* sound is very liable to be overlooked in our first efforts at physical exploration; yet by care and particular attention it can be recognized. It is a hoarser sound than the vesicular murmur, and sounds like air passing quickly through a tube. This sound is confined entirely to the trachea and larger bronchial tubes; though, when the lungs are in a congested or hepatized condition, the respiratory murmur being destroyed by the partial or complete occlusion of the air vesicles, it becomes very apparent even in the smaller ramifications; and in these cases the natural sound in the larger tubes becomes much exaggerated, and is

is called the cavernous sound. The latter is a more puffing, blowing, and sudden or abrupt sound.

There are other sounds occurring in diseased conditions of the lungs which frequently entirely supersede or destroy those of a healthy character. These are called *rales* by the French, and *ronchi* by the English. They result entirely from an altered condition of the tubes through which the air passes, or from undue and morbid secretions from the mucous surfaces, through and over which the air moves in the act of respiration. These sounds or râles are of two distinct varieties, resulting from certain conditions of the mucous surfaces and of the secretions from them. They are designated as dry and moist râles. Of the dry râles there are two varieties specially worthy of attention, called the sibilant and sonorous. The sibilant râle, as its name indicates, may be recognized as a low whistling or hissing sound, which may be heard during both inspiration and expiration. This sound is produced by the increased rapidity with which the air passes through particular portions of the smaller bronchial tubes, which are diminished in calibre by engorgement of the mucous membrane, or by adherent secretions, or frequently by spasmodic contraction of the tubes from irritation. The sonorous râle is produced by the same cause as the sibilant, but occurs in the larger tubes. It is a deep, grave, and dry sound, heard during both inspiration and expiration, though most distinctly in the latter, while the sibilant is most marked in the former. It has been likened to the snoring of a man, or the cooing of a dove, or the bass notes of a violin. It varies much in intensity, sometimes being scarcely perceptible, while at others it can be heard at some distance from the chest, and even gives a vibratory motion to its walls.

The *moist* or *mucous rales* are caused by the passage of air through the bronchial tubes of considerable size, containing mucous or other fluids, as pus, blood, etc. The sound is that of bursting bubbles. When the bubbles are small and confined to the lesser tubes, the sound is called sub-mucous. In this case the sound is finer and more crackling. The *crepitant* and *sub-crepitant* râles are also varieties of the moist râles,

perseverance in order to a correct analysis of the case. There are other sounds, not, however, so important or distinct, and in fact not so easily understood or recognized as those which I have described, which you will find discussed in the books on the subject, to which you can refer if curiosity prompts you to do so.

¶ The *vocal resonance* or *sounds* have an important bearing in determining certain forms of thoracic disease, and should not be overlooked in our investigations of this important group of morbid phenomena. The method is called auscultation of the voice, and is performed in the same way as auscultation of the lungs, with this difference, that in the latter the sounds produced by respiration are observed, while in the former it is the sounds emitted in speaking that we seek to hear. As it was necessary, in order to appreciate the morbid sounds of the lungs, first to know those that are healthy, so it is important to understand the healthy or natural sounds of the voice in order to distinguish those that are unhealthy. By applying the ear or the stethoscope to the throat or the upper part of the chest, over the sternum, while an individual is speaking, the vibrations of the air become so sensible and loud that it is difficult to convince yourself for the moment that the person's mouth is not directly at the ear. But the want of distinctness in the articulation soon shows the error. The sound is no doubt produced by the vibrations of the glottis, and thus communicated by contiguity of parts in contact with the throat. This sound is called *tracheophony*, or the voice through the trachea. By changing the position of the ear or the instrument to lower and more lateral portions of the chest, on either side of the upper or middle portion of the sternum, in the axilla or on either side of the spine between the scapulæ, the vocal vibrations will still be heard, but more diffused or less apparent than higher up. This is owing to the diminished size of the tubes through which the vibrations move, and also the increased density and thickness of the structures through which the vibrations are communicated. This is called *bronchial resonance* or *bronchophony*. As you get farther removed from the larger tubes, and over

safely conclude that a portion of the pulmonary vesicles have become obstructed, and a partial or complete consolidation at that point has taken place. These phenomena will invariably, when the condition referred to exists, be accompanied by a dull or flat sound upon percussion at that particular point.

The most sensible modification produced on the voice grows out of a thin layer of liquid between the lung and the walls of the chest. It is rendered more sensible and striking, probably, by the vibrations of the fluid produced by the vocal resonance of the lung, and is hence transmitted in a broken and tremulous manner. This sound is well compared to the bleating of a goat, and is called by Laennec *ægophony*. This peculiar sound is almost entirely dependent upon effusion into the pleural sac, from pleuritic inflammation, by which compression of the pulmonary tissue is produced; and thus the vibrations of the vocal resonance are readily communicated in this strikingly modified character.

There is another sound dependent upon a well known condition of the lung, of great practical importance, to which I desire to call your attention before leaving this subject. From whatever cause a cavity is formed in the parenchymatous substance of the lung, the voice will pass into it, and will be heard as distinctly by the ear applied to the chest, as when applied to the region of the trachea. The term used to designate this vocal sound is called *pectoriloquy*. It is not so distinct in those small abscesses usually attendant upon protracted cases of tuberculous consumption, but when the cavity is of considerable size, and exists near the walls of the chest, and opens into a large tube, the phenomenon is very distinct, and sounds as if the voice was in immediate contact with the ear.

I have thus endeavored to describe to you the main phenomena produced by respiration and the voice, in health as well as in disease of the lungs. I have omitted some of the distinctions made by the authorities, partly because I do not desire to burthen your minds at this time with an unnecessary minuteness on a subject which can only be mastered in a

with the character of the sound, and the general philosophy of the case. It is an attendant symptom upon inflammation of the pleuræ, but not always present. The explanation I conceive can be found in the partial obstruction of more or less of the pulmonary vesicles on the periphery of the lung, in contact with that portion of the pleura involved in disease. And the reason it continues but a short time in a case of active disease, as all observers know is the fact, is not as is generally supposed because effusion has taken place, but because those pulmonary vesicles in contact with the diseased tissue are entirely or almost entirely obliterated, when this would of course necessarily cease. But on the decline of the disease and return of the respiratory movement, the phenomenon is again developed. This too accords with general observation. In those cases where the sound is not discovered, I suppose the costal pleura alone to be involved. If this sound were dependent on the roughened condition of the pleura, it should be heard in every case, not even excepting that in which the inflammation is confined to the costal pleura, though in the latter it might be less in quantity. I have already referred to the peculiar character of this sound, and will again say that in listening to it no one would for a moment think it could be emitted by the gentle and very partial movement of two plastic surfaces upon one another; but would at once recognize a striking analogy between it and the sub-crepitant râle, well known to characterize inflammation of the substance of the lungs. Nor is this observation entirely peculiar to myself. Dr. Wood says, "it sometimes closely resembles the sub-crepitant râle," showing clearly that my views are not wanting in support by the observations of others.

In concluding these general remarks on the physical phenomena presented in examinations of the chest, I cannot too strongly press upon your attention their vast importance, in view of every consideration connected with your own reputation and moral feeling, as well as the inestimable advantage often resulting to those reposing confidence in your skill and practice. You should therefore lose no opportunity to avail yourselves of every advantage that may offer, to be-

LECTURE XLII.

BRONCHITIS—INFLAMMATION OF THE MUCOUS MEMBRANE OF THE BRONCHIÆ.

Varieties—Acute—Mild attacks—Symptoms—Periodic febrile symptoms—More severe grade—Symptoms—Brain affected—Generally modified by malaria—Physical diagnosis—Anatomical developments—Cause—Treatment—Subsequent cough—Remedy—Diet—Remarks on bleeding.

Of this disease there are two varieties, distinguished by the terms *acute* and *chronic*. We shall first consider acute bronchitis, it being a disease of more common occurrence, and greater practical importance than the chronic form. Under this head we shall have to treat of every grade of violence incidental to the complaint; from the slightest cold, producing irritation of a portion of the membrane, to the most grave, extensive, and active inflammation, affecting the whole mucous surface, as well as the sub-mucous and cellular tissues of the bronchial tubes. In its mildest forms it usually commences with a slight irritation, and symptoms of coryza. Taking its rise in the nasal cavity it gradually extends itself to the mucous membrane of the bronchia, or bronchial vessels. These symptoms may in some cases continue for a few days, without producing much constitutional disturbance, and then gradually subside, accompanied only by a copious expectoration of thick mucus.

In other cases, however, it commences with more violent and urgent symptoms, involving from the first the laryngeal, tracheal and bronchial mucous surfaces, with a development of catarrhal fever, which may accompany the case with more or less severity through its whole course. Whether the

country. During the whole progress of the disease, the cough is exceedingly troublesome, and often occurs in distinct paroxysms.

In the ordinary cases which have come under my own observation, the active symptoms, under appropriate treatment, gradually decline, accompanied with a copious expectoration of an opaque, white, yellow, or greenish character, associated with a decline of fever and all the other symptoms of active disease. The pulse becomes soft, full, and less frequent, the skin moist and cool, and the urine more free, depositing a copious sediment on cooling.

Another and more formidable grade of bronchitis will occasionally be met with, attended with symptoms of extensive *congestion*, occurring principally in young children and in very old persons, in whom there is not sufficient vital force or recuperative energy to throw off disease. In these cases the symptoms are all of a more aggravated character; and as the disease progresses the inflammation will be found to extend into the more minute bronchial vessels, and perhaps into the air-cells of the lungs. Great oppression and difficulty of breathing are also characteristics of this modification. This arises from a thickening of the sub-mucous and cellular tissues, which offers an impediment to the free passage of air. If it extends to the more minute air-cells of these organs, a more hurried and oppressed respiration will point to the condition. It will also be readily recognized by the physical phenomena developed by auscultation and percussion. A distinct blowing sound will be observed, accompanied with attacks of dyspnea, producing in many cases a state bordering on asphyxia, which will only be relieved by an expectoration of glutinous and sticky, inspissated mucus, which in some instances almost resembles a membrane. If this great and palpable obstruction continues, the blood very soon becomes loaded with carbonaceous matter, or does not undergo the change so essential to its free circulation in the capillary vessels. Under these circumstances the brain, which is always one of the first organs of the body to suffer from a want of proper oxygenation of the blood, shows unequivocal

opments growing out of auscultation. When the inner surfaces of the bronchial tubes in their more minute ramifications are swollen and dry from inflammatory action, the air, as it passes in and out, but more especially as it passes in, will produce the peculiar sound known to the faculty as sibilant or dry râle, which will be readily recognized in common language by a hissing, whistling, or wheezing respiration; but if it has not extended to the more minute bronchial tubes, the sound has been compared to the cooing of a pigeon, or the bass note of a violin, technically designated sonorous râle. These are the two modifications of sound which are developed in the early stage of this disease, resulting from a dryness of the inflamed mucous surface. They may be co-existent, or exist separately; the sonorous râle accompanying inflammatory action in the membrane belonging to the larger tubes, while the sibilant will only be developed by a similar condition of the more minute bronchial passages. If the inflammation is confined to the bronchial vessels proper, the respiratory murmur peculiar to a healthy lung will be palpable and distinct, unless the two sounds above referred to obscure this vesicular one, which will rarely be the case, except in weak and debilitated persons or young children. In fact in most cases, this vesicular sound will be somewhat increased and more audible in expiration, unless the inflammation extend to the pulmonary vesicles.

Contraction of the bronchial vessels from swelling or spasmodic action takes place generally in this disease, so that we may expect to hear these sounds in the greatest number of cases. Mucous râles are not unfrequently associated with the sibilant. If the smaller tubes are much involved, mucous secretion, more or less free, is usually attendant upon the disease, more particularly during its progress or on its decline. In this case the mucous râles will be heard.

What I more especially desire to impress upon your minds, however, is the peculiar diagnosis, by which this disease is usually recognized—namely, the dry râles, sonorous and sibilant, more or less mixed with the moist or mucous; and the usual resonance on percussion. These, with the peculiar

general, who regard its appearance with comparatively little alarm or apprehension.

Bronchitis is also a common attendant on measles and whooping cough, and in fact it may be questioned, whether the essential characters of those diseases are not dependent to a certain extent upon inflammation of the mucous membranes of the bronchial tubes associated with their specific natures.

Treatment. A large majority of these cases, whether occurring as epidemics, or such as we often find somewhat endemic in their character, may readily be thrown off or relieved by very simple means, and even in many cases without treatment of any description. But for the safety of the patient, as well as the reputation of the physician, when called upon to visit these cases, it will be best to make use of those measures, though simple in themselves, which are best calculated to fulfill the indications presented, even though such cases might be expected to terminate favorably without such applications. For this purpose the patient should be directed to use a warm saline foot bath and some mild diaphoretic infusion, with the addition of a small portion of sudorific tincture,* say a drachm every hour until free and general perspiration is produced. It will be well also to follow up this treatment by administering on the following morning some mild aperient, especially if the bowels should be somewhat confined, or the cough troublesome; such as a seidlitz powder or mild pills, or if there are evidences of inactivity of the liver, half a grain of podophyllin and one grain of leptandrin.

I frequently use a syrup prepared from a decoction of eupatorium perfoliatum and sanguinaria canadensis, and at night on going to bed add a small portion of paregoric; or, as a substitute, our common sudorific tincture or red drops, in appropriate doses mixed with salad oil and loaf sugar, will afford most certain and prompt relief. In many cases a mild vegetable diet, and keeping the patient within doors, will be all that is

* R Camphor, ipecacuanha, snake root (Virginia), Spanish saffron and gum opium, each 3ss. alcohol, O.iss.

about. When these results are effected, if it be found necessary, the administration of an emetic will be appropriate and in most cases beneficial.

It is a matter of some importance to know the particular kind of emetics that can with the greatest confidence be relied upon. After much experience, I would recommend an infusion of lobelia and boneset, as being the most prompt and efficient in its operation, and fulfilling all the indications desired in a greater degree than any others I have ever used. In those cases not palpably associated with fever of a particular character, the measures already recommended should be followed by the administration of thorough and general diaphoretics. Our common sudorific tincture administered in drachm doses, in connection with the free use of asclepias tuberoso or pennyroyal tea, and repeated as often as every hour, or hour and a half, for two or three times, will rarely fail to bring about desirable and important results, and it will be found in many cases that all the active and urgent symptoms will gradually subside. Even if, in some cases, your expectations are not fully realized, a very decided amelioration in the urgency of the symptoms will follow these efficient appliances. It may be necessary to repeat the next day or the day following both the emetic and cathartic, though as a general rule their repetition will not be necessary; and if it be not thought requisite to repeat them, the system may be kept constantly under the influence of a syrup of sanguinaria and eupatorium, to the extent of producing a constant but slight nausea, which will soon be followed by more or less copious expectorations. Another important influence of this syrup under these circumstances, when administered to the extent directed above, is to diminish the force and frequency of the heart's action, and thus in a very sensible degree tend to reduce local engorgement.

In those cases in which the cough exhibits the peculiar spasmodic symptoms so often characteristic of bronchial inflammation, the free use (to the extent of its specific action) of the extract of hyoscyamus, will be found to exercise an important influence in controlling these symptoms. It should

supervening in measles or any other form of disease, appropriate doses, according to the age, of from five to twenty drops of sudorific tincture, mixed with from one to two teaspoonfuls of salad oil and loaf sugar, will be found to answer an excellent purpose, especially if taken at bedtime. I have also often prescribed with the most marked advantage the syrup of balsam tolu and senega, from one half to a drachm, with one eighth or a twelfth of a grain of morphine to each dose, repeated three or four times a day, but more especially at night. If with this cough we have a slight remnant of febrile action lingering about the system, though a sensible amendment from day to day may be observed, frequent ablutions over the entire surface with whisky and water, made warm and applied with considerable friction, will be found a valuable appliance not only in its influence on the general system, but as exercising an important control over the severity of the cough. There are other measures which might aid in the removal of this and kindred diseases, which the individual experience of every physician will teach him, but I trust you will find the general outlines of treatment here recommended, reliable and safe.

In regard to *counter-irritating* applications, or the use of cups on the chest, in pure bronchial inflammations, I must say I have not heretofore derived much advantage from their use; I have therefore recommended the hot hop fomentation in their stead.

The *diet* in all such acute diseases should be of the most light and simple character; but after the disease is removed, more especially in those severe cases where the system has become greatly debilitated, a nutritious and tonic diet should be directed.

Before concluding this branch of the subject it may be expected that I should say something more in relation to the treatment of the *epidemic feature* of this disease, which has so often presented itself throughout different sections of our globe. By reference to the authorities, it will be observed that I have in many respects differed materially from them, not only in the choice of remedies to fulfil the same indica-

LECTURE XLIII.

CHRONIC BRONCHITIS.

Variety of modifications—Symptoms—Remarkable case—Supervention of acute symptoms—Physical symptoms—Prognosis—Treatment—Emetics—Purgatives—Tonics—Diet—Chalybeates—Restorative bitters—Bathing—Palliative for cough—Counter-irritation not reliable—Exercise important.

There are few diseases exhibiting a greater variety of modifications than chronic inflammation of the bronchial mucous membrane. It is often found with symptoms of a very mild and simple character, and progressing from this to the most grave and obstinate disease, finally terminating in true phthisis pulmonalis or consumption. In its mildest form it exhibits little else than a simple irritation, evidenced by a tickling troublesome cough, accompanied by little or no constitutional disturbance, and often subsiding on the approach of warm, uniform and pleasant weather. But in its more severe grades, it becomes a disease of a more serious character, involving the general health of the patient, who gradually sinks under the protracted and debilitating malady, until finally the constitution is undermined, the patient exhausted and emaciated, exhibiting all the symptoms of consumption, with hectic fever, night sweats, and a most rapid, small, and weak pulse. During the rise and progress of this disease, whether it be of a mild or more severe character, a copious expectoration of a yellow, greenish or whitish appearance and in some instances streaked with blood, will be found to exist.

The cough associated with it often occurs in severe paroxysms, and in some instances exhibits well defined evidence of a spasmodic character, as evinced by the stricture, the

chance to mistake its origin, since it was always preceded and followed by a very severe and protracted cough.

From all the general appearances and symptoms presented it would have been difficult for me to have escaped the conclusion that the case was one of consumption, had it not been for my familiarity with the general and minute physical phenomena characteristic of chronic bronchitis alone. In fact it had been pronounced by a number of physicians, who were not, in all probability, familiar with the physical symptoms of this disease, an incurable case of phthisis pulmonalis, but the issue clearly proved their error.

Not unfrequently during the progress of the chronic form of this disease, symptoms of a more *acute character occur*, that may require a slight change in the general course of treatment differing from that which the nature of the disease in protracted cases usually suggests.

Diagnosis. The physical symptoms growing out of this disease, are striking and well defined; and, to a person familiar with this mode of investigating disease, affords clear and conclusive evidence of its character. In fact, the combined symptoms proceeding from a physical examination are alone to be relied upon in determining its characteristics. For while we may have more or less of the mucous râles, mingled with the sonorous and sibilant, the vesicular murmur will not be less apparent, but perhaps may be somewhat increased, and indications of healthy action in the parenchymatous substance of the lungs will be observed. In addition to this, a clear resonance upon percussion will be observed, a resonance neither of a dull, flat, nor obscure nature, nor that increased resonance which characterizes abscesses or cavities in these organs. With these symptoms it is difficult for one familiar with the phenomena presented by these physical explorations to escape the conclusion that they present a case of this description.

Prognosis. With all the alarming symptoms which a casual observer would naturally attach to these cases, and with all the unfavorable appearances that we often find them presenting, it is a disease, which, with proper treatment, is generally of a medicable character. In this I may differ from

It becomes also a matter of some importance, in looking into this class of remedies, to select those that operate with mildness on the system, and at the same time with sufficient energy to fulfil the indications desired. An infusion of one half an ounce, each, of lobelia and eupatorium, in a pint of water, given in tablespoonful doses every ten minutes, until its full and thorough influence is felt upon the system, should be administered. It has this especial advantage over most other emetics, that it will not continue to operate longer than you continue to administer it. It becomes necessary therefore to repeat the doses until the contents of the stomach have been evacuated, when its general influence will be apparent. In addition, lobelia appears to exercise, to some considerable extent, a specific influence upon the mucous membrane of the bronchial vessels. Hence, in most cases, after its operation, a more copious, free and easy expectoration is sure to follow, which will be found to exercise an important bearing upon the ultimate removal of the disease. This, together with its influence upon the stomach, as well as upon the general system, exciting, as it does, to a more healthy and vigorous action, points most clearly to the advantages to be derived from its operation.

From its general influence in the cases above alluded to, where it seems to be indicated, a single emetic should not be relied upon, but it will be found decidedly beneficial to administer it once a week, or once in two weeks, until a more healthy and vigorous condition of the system shall be manifested.

Though we by no means recommend frequent or even thorough purgatives in the treatment of this disease, it often becomes a matter of importance that a mild cholagogue aperient should be resorted to; not in sufficient quantities to produce decided purgative action, but merely to keep up an aperient influence, and at the same time secure a more healthy and natural condition of the glands concerned in digestion. For this purpose a pill composed of one fourth of a grain of podophyllin and one grain of leptandrin, with sufficient of the extract of tarax. to form a mass, should be administered every two or three nights, according as the case seems to require.

- We should not be deterred from its free and full administration in view of any inflammatory symptoms, or of a high febrile state of the system. We should at all times recommend it at that period of the disease when these symptoms are least manifested ; or in other words, during the remissions, which suggest the propriety of its use. In addition to its controlling influence over the various grades of febrile diseases characterized by periodicity, it will be found to have a very salutary influence in assisting to repair the derangement of the blood, and to restore healthy action to the general system.

The condition of the skin is a matter that should never be overlooked in the treatment of all chronic diseases, and in those of the mucous tissues it becomes of more importance than in any others with which we have any acquaintance. Its immediate connection, or rather continuity, with the mucous surfaces bespeaks for it more attention in these affections than in most others of a chronic nature.

If the patient be much debilitated, frequent saline, warm pediluvia, and bathing of the entire surface with brook water and whisky every night on retiring to rest, accompanied with brisk frictions, should never be neglected. After the patient's strength is somewhat restored, and a more healthy and vigorous capillary circulation brought about, a shower bath in the morning, or sponging the body with cold water, will be found to exercise a very beneficial influence in the curative process of this disease.

As a palliative to the troublesome paroxysms of coughing, as well as to afford more quiet and comfortable sleep at night, a syrup of sanguinaria and eupatorium with equal parts of paregoric may be prescribed as often as may be necessary for the case ; or as a substitute, I have occasionally used the syrup of the tincture of tolu and senega, with small portions of morphine, taken under similar circumstances with the last named remedy.

In some of these cases connected with scrofula, I have seen decidedly good effects accrue from the persevering use of liberal doses of cod liver oil. This may be given conjointly

LECTURE XLIV.

PLEURITIS — PLEURISY — INFLAMMATION OF THE PLEURA.

Characteristic symptoms — Location of pain — The cough — Associated fever — Physical signs — Before effusion — After effusion — Other modes of diagnosis — Autopsy — Cause — Diagnosis — Prognosis — Treatment — Evils of blood-letting — Quotation from Magendie — Same author on antimonials — Emetics may be useful — Cupping — Cathartics — Sudorifics — Anti-periodics — Chronic pleurisy — Character — Treatment.

This disease is rarely found otherwise than as it is associated with inflammation of contiguous tissues. In this connection it frequently occurs, and often without being recognized. It usually commences with a chill more or less protracted and severe, and is followed by febrile reaction, generally proportioned to the extent of the disease.

The *characteristic symptoms* are a sharp pain in the side, and in most instances a dry, short cough, with quick and hurried breathing, and general febrile indications. Pain is one of the most uniform symptoms, and in fact may be considered diagnostic. It may occur simultaneously with, or after the chill, and in some rare instances even before its development. It is of a severe and lancinating character, and has been compared to the thrust of a sharp instrument. It is sometimes vulgarly called "stitch in the side," and is usually confined to a single portion of the side, not unfrequently occurring in the mammary region, though it is by no means peculiar to that part. The membrane which is the seat of this disease lines the cavity of the chest, and is reflected over the entire surface of the lungs, and, though

The *associated fever*, in this country, has generally too much of a periodical character to admit of doubt that it is greatly modified by the malarial influence usual in other diseases, and consequently is not entirely dependent upon inflammatory action. Hence you will observe in most cases distinct and well defined morning remissions and evening exacerbations. Derangement of the secretory functions, also, and loss of appetite, furred tongue, dry skin, scanty and high-colored urine, and a torpid condition of the bowels, are the general concomitants of this disease.

The *physical signs* become a matter of considerable importance in forming a correct and satisfactory diagnosis. If the disease occurs in its pure and uncomplicated form, as it does occasionally, the physical symptoms arising out of it can be relied upon with great certainty to indicate its true character. It is most generally, however, associated with more or less disease of the substance of the lungs, and its mucous investment. When this is the case, the phenomena above referred to become less pointed in their character, and not so much to be relied upon as in some other forms of disease of the chest.

In its *early stage*, before excessive effusion has taken place, or the substance of the lungs has become diseased, percussion is quite clear and resonant, and very little change is observed in the respiratory murmur, though a slight diminution will usually be recognized, more particularly on comparing the healthy with the diseased side. This is not supposed to result from actual disease of the lungs, but from the diminished force with which air passes into the minute cells, produced by the imperfect effort made for this purpose. But as the disease progresses, and the surface of the lungs becomes involved in the inflammatory action, a slight effusion of coagulable lymph soon follows, which readily becomes inspissated and concrete upon the surface of the serous membrane. At this period another sound is said to be recognized, called the *friction sound*, which, from its peculiar character, I imagine results from other causes than those generally assigned. This sound is of a quick, jerking character, and, from some devel-

and when but a small stratum is between the lungs and the side of the chest, that quivering and bleating sound of the voice, denominated ægophony, may be distinctly heard. But as the effusion increases, this sound gradually becomes less distinct, until at length it ceases entirely. A great diversity of opinion exists in regard to the amount, thickness or depth of the fluid, when this result is brought about; but it is very clear that, whatever may be the extent of this accumulation, it will not destroy though it does modify the sounds in the large bronchial tubes.

In addition to these evidences resulting from auscultation and percussion, there are others of some importance which ought not to be overlooked, derived from the *shape of the chest* and the relative position of the parts within it. When the effusion is extensive, producing great obstruction, or annihilation of the functions on one side, while the other is free and unembarrassed, a distinct and sensible difference in the shape and appearance of the two sides will be observed. While you will perceive a clear and distinct movement of one side, somewhat increased above its natural state, you will recognize no movement of the other side. In addition to this, displacement of the heart will readily be recognized by the application of the hand, and displacement of the liver will also be discovered.

The *autopsic* developments, growing out of and connected with this disease, can readily be inferred from what has already been said on the physical phenomena. In all cases a marked increased redness of the membrane will be detected, and adhesions resulting from the plastic effusions, so common in inflammation of the serous tissues, will often be found. In almost all of these cases which terminate fatally, more or less of effusion will be found through a greater or less extent of the pleural cavity. This effusion differs somewhat in its character according to the circumstances of each case. In some instances it is of a yellowish, limpid character, while in others it becomes somewhat dark and inspissated, being mixed with flocculi of an albuminous semblance. Then again it is found to be more turbid, and occasionally exhibits a

mentioned, which occasionally produce the disease; such as mechanical injuries, and the transfer of irritation produced by the sudden arrest of long continued discharges, as well as the sudden disappearance of extensive eruptions upon the surface. It also occasionally grows out of the softening of extensive tuberculous formations in the substance of the lungs, near the surface in contact with the pleura. Males are said to be more liable to it than females, owing no doubt to the more frequent and greater exposures attendant upon the avocations of the former; and it is not confined to individuals of a full or plethoric habit, being quite as often encountered in persons of an entirely opposite diathesis. It occurs more frequently in the spring and the latter part of winter than at any other season of the year, and is rarely observed as having an epidemic character, though in many instances it occurs endemically.

Diagnosis. The diseases with which pleurisy is most liable to be confounded are rheumatism or pleurodynia, inflammation of the investing membrane of the heart, and also of the substance of the lungs. In pleurodynia those peculiar physical phenomena, which have been mentioned as diagnostic of pleuritic inflammation, are entirely wanting, with the single exception of the diminished respiratory action, which in this disease is entirely owing to the want of a natural effort at respiration. In this form also of rheumatic disease, which may with great propriety be called neuralgic rheumatism, there is usually an entire absence of febrile symptoms, as well as of cough. Besides, in the latter disease, we often find a very changeable character, shifting from one part to another, which is not at all the case in pleurisy. *Pneumonia* will be readily recognized by the difference in the character of the pain and of the expectoration, and the more palpable evidence growing out of percussion and auscultation, in diseases of these organs, that are not developed in pleurisy.

Prognosis. Whether in its simple or more complicated form, whether of a mild or more severe character, it is a disease which, by proper treatment, usually terminates favorably. But when extensive effusion takes place, it becomes

observations. In the course of an extensive range of practice for upwards of twenty years, in which pleuritic inflammation, in some of its modifications, has been of frequent recurrence, I have rarely lost a case, and I recollect but a single one in which effusion to any considerable extent either followed the disease, or was associated with it in its progress.

It is well known that in local inflammations the *abstraction of blood* by the lancet tends to add to the obstruction already existing in the capillary vessels, and exerts a debilitating influence upon the *vis a tergo* of the system, thus directly adding to the difficulty sought to be removed. And this alone is a sufficient and satisfactory objection to the use of this agent in the treatment of pleurisy or any form of inflammatory disease. But there is another and if possible still more serious objection to its use, bearing with special weight on the disease under consideration, an objection that should never be overlooked, even though the one first urged should not be deemed satisfactory. I refer to the well established deteriorating influence that the general abstraction of blood has upon the due proportion of its component elements, upon which its free circulation through the capillary vessels essentially depends, and also to the predisposition which that measure induces to dropsical effusions in all cases where disease is located in serous tissues. The varied experiments made by the celebrated Magendie and others, on the blood of the human subject and many of the inferior animals, prove beyond question that the influence referred to is not in the slightest degree exaggerated. In these experiments it was clearly shown that the red globules and fibrin of the blood are greatly diminished in proportion to the less important and less vital elements which enter into its composition. In other words, the serous portion is left in excess, and has by some means to be disposed of before the true and healthy balance of the system can be restored. Hence in those cases of local inflammation where the proportions of the blood have been disturbed as before stated, effusion affords a ready outlet for the disposal of the disproportion and excess of serum, and hence it is that frequent and excessive effusions

on this point. If bleeding be prescribed *because* the blood is buffy, I say that they who so prescribe it act in defiance of facts, and hence I utterly reject, on this score, the propriety of its employment. But if bleeding be advised, because it relieves the patient, diminishes the oppression he feels, soothes his pain, and, finally, because patients habitually recover by or rather after the use of this remedial agent, then, empiric as I am, I admit that we are justified in having recourse to it; nevertheless, I must, at the same time, declare that I cannot conscientiously affirm, in the majority of cases, that the malady would not have gone through its periods, and reached a fortunate termination, had venesection not been employed. And my doubts on this head are strengthened by the fact, that if, instead of weakening your patient, you support his physical and moral strength, and, watching the disease closely in all its phases, promote the occurrence of favorable crises, and assist nature (by directing abstinence from solids, and the use of diluents) in overcoming the obstacles she encounters, you frequently see rapid recoveries occur, more rapid even than those witnessed as the sequent of abundant and repeated blood-letting. The methods of treatment with which we are now acquainted, are unfit to fulfill such indications as those I have enumerated; this I am well aware of, and, indeed, in the present state of things, I am, as I have more than once declared, persuaded that it is wiser to stand still, and do nothing, than act, as we must do so often, under the apprehension of possibly increasing the violence of the disorder. For you must remember that the treatment by blood-letting, employed in almost every case of acute disease; but especially in those I have adverted to, is *one of the means of inducing those very diseases in healthy animals*. Bleeding lessens the quantity of fibrin, proportionally increases that of the serum, and weakens the energy of coagulation; and you are aware that whatever interferes with the coagulability of the blood, its most important quality, manifests itself by morbid alterations in the organs, whence, in their turn, result a variety of serious general affections. Upon this point I feel, gentlemen, that I cannot address you

ment of this affection, and yet I have no hesitation in affirming that all the cases of rheumatism I have treated have terminated favorably."

Commending these remarks to your attention, I proceed to detail the course of treatment alluded to; and in the first place whenever this disease is in any way connected with evident derangement of the stomach, the full and efficient operation of an *emetic* will afford more or less immediate relief to all the active and urgent symptoms which it develops, and will also exercise an important influence in equalizing the circulation, and bringing about, with other means that are to follow, a speedy resolution of the case. I do not think the objection urged by some authorities against the use of emetics in inflammatory diseases, on account of the severity of local pain, offers any bar to their administration. For I have found that they do not aggravate or add to the severity of the pain, but on the contrary usually afford marked and immediate relief; and I therefore do not hesitate to administer this remedy, when it is indicated, to the extent of producing general relaxation of the system. The acetous tincture of *sanguinaria* and *lobelia*, given in tablespoonful doses every ten or fifteen minutes, aided by a warm infusion of *eupatorium perfoliatum*, until a thorough operation is produced, is a very valuable emetic, and can be recommended with great confidence as a safe, and sufficiently efficient remedy for all practical purposes.

In severe cases, either directly after the administration of the emetic, or before it if more convenient to the physician, the extensive application of *cups* to the side affected will not only assuage the severity of the pain immediately, but in many cases will produce more or less *permanent* relief, which ought never to be lost sight of in diseases of this description; and it will be found desirable to continue to repeat this application until the disease is entirely subdued. The small amount of blood that is usually obtained by cupping does not exhaust the vital force, nor interfere with the recuperative energies of the system, and yet the local engorgement is diminished by the direct abstraction of blood through the

purpose. The sudorific tincture should be repeated once or twice, with the continued use of the decoction, until a general relaxation and free perspiration is brought about. It is of great importance that this condition of the system should be continued, and the measure suggested should therefore be persevered in as often as may be necessary for this purpose. In addition to this, the hop fomentation applied to the side affected as hot as the patient can bear, covered entirely with a dry flannel to protect the clothes from becoming wet, and changed every half-hour or hour, will not only aid in keeping up the general relaxing influence, but will have an important local bearing upon the disease. Thus all the great outlets of morbid elements, which, in almost every form of acute disorder, are essentially obstructed, and so have much to do in the production and continuance of disease, will be called on, thoroughly and simultaneously, to perform their functions, not only to the extent of their healthy action, but so as to make up for their diminished action, in their extra depurating influence on the circulating fluid. And you will rarely find a system so insensible to the ordinary calls of vital action as not to fully respond to these powerful measures. In a large majority of cases in my practice, in which these remedies were fully tried, the disease yielded without further treatment, and this, too, whether it was confined entirely to the pleura, or extended to the neighboring parts or organs.

But if the whole force of the disease should not be entirely broken down, and healthy action not fully restored by these measures, they should be repeated more or less as the circumstances of the case may require. Whether another emetic, or the application of cups and scarification, or a full and thorough cathartic, or a more mild cholagogue aperient, or several of these combined, should be administered, will depend, as a matter of course, on the condition of the patient and the symptoms still existing in the case.

As heretofore intimated, it is often found in this country, that the febrile symptoms associated with the disease are of a distinct and well-marked *periodical* character. This is very apt to be the case in early spring, and in such cases, when the

ality, to the mode of treatment which I have just described. I trust, therefore, you will not consider it a mere speculation, or a vague theory emanating from a "closet practitioner," but a theory firmly believed, practically applied, and earnestly recommended.

CHRONIC PLEURITIS—CHRONIC PLEURISY.

Pleurisy sometimes assumes a chronic form, presenting, as would naturally be expected from this modification of the disease, a mere amelioration of the symptoms of the acute form. When such is discovered to be the case, there are few if any measures that will be found to exercise greater and more lasting benefits than the application, over the seat of the difficulty, of an extensive irritating plaster, prepared in the usual way. This should be continued, and a copious discharge of purulent matter kept up, for a number of weeks. At the same time, the decoction of *asclepias tuberosa* and *sanguinaria* should be given, partly with a view to their sedative influence and partly for their diaphoretic effect, but mainly for the diuretic action which this preparation rarely fails to produce in such cases. In connection with these measures, a pill composed according to the following formula may be given, one every night and morning:—

R Podophyllin, gr. x.
 Digitalis, gr. xv.
 Squill, ej.

Ext. sambucus and taraxacum *aa* q. s. to form a mass of proper consistence. Divide into 20 pills.

If the bowels are inclined to be costive, a decoction, prepared by mixing an ounce each of podophyllum pelt., apocynum can. and eupatorium purpureum in a quart of water, adding sufficient good gin to prevent fermentation, and sweetened, may be given in tablespoonful doses once in six hours, and should be increased or diminished so as to act two or three times freely on the bowels every twenty-four hours. At the same time, eight grains of iodide of potassa may be given three times a day. These measures will rarely disappoint

produced in part, no doubt, by the passing of air into the orifice made for the discharge of the fluid. The operation is said to be more successful in cases of serous accumulations than in those in which they are of a purulent form. But this is probably referable rather to attendant complications than to any inherent difficulties connected with the operation in different cases.

I have heretofore said that I look upon this difficulty as of very rare occurrence when the treatment pursued in pleuritic inflammation had reference to the true cause and pathology of the disease. But if the case was not too far advanced, nor too extensively complicated, to preclude a reasonable expectation of the success of the operation, I have no great doubt that it might be successfully treated by the persevering use of the means I have recommended. At any rate, the operation belongs to the province of surgery, and for the more full consideration of the topics connected with it I refer you to the works treating particularly on that subject.

The inflammation may be found to exist in only a small portion of the lungs, or in a distinct portion of one lobe, which by a careful examination will be recognized. This is called *lobular* pneumonia. It may also affect both lungs at the same time, and produce a grave and aggravated form of the disease, more uncertain in its progress and violent in its symptoms, which is called *double* pneumonia. It also may, it is said, be confined to the mucous surface lining the minute air-cells of the lungs, producing symptoms that are supposed to be peculiar in their character, (of which, however, I have great doubts,) called *vesicular* pneumonia. Again, it is said that the cellular structure, intervening between the minute air-cells of these organs, becomes the seat of distinct inflammatory action, and is hence called *interlobular* pneumonia or *intervesicular* pneumonia. These two latter distinctions have, in my opinion, no particularly important bearing in any respect, whether as influencing the treatment or termination of the case; especially, since there is great doubt, whether their independent existence can be recognized at all; and I therefore see very little necessity for retaining them. When the investing membrane of these organs becomes inflamed, in the progress of the case, developing symptoms somewhat peculiar, it is then called *pleuro-pneumonia*.

Other distinctions, predicated upon the *symptoms* occurring during its progress and dependent upon *disease of other organs*, have an important practical bearing, which I shall have occasion more particularly to refer to, further along in its consideration. I refer now, to what is called bilious and typhoid pneumonia. It is also found in its single or unassociated condition, when it is called *primary*—and when associated with disease of other organs or with other diseased conditions of the system, it is called *secondary*. As occurring in this country, within the range of an extensive experience, I have rarely found it in its primary or unassociated character. It is frequently observed with a low and depressed condition of the system, developing what is usually called typhoid pneumonia; but, perhaps the most common form met with

during paroxysms of coughing. This may be considered one of the characteristic symptoms of inflammation of the substance of the lungs. While in health the number of respirations averages about eighteen per minute, in this disease the number is frequently increased to forty and upwards, and is sometimes greatly disproportioned to the other symptoms of the case.

The *cough* varies exceedingly in different cases, no doubt depending, to a great extent, upon the particular structure involved, but more particularly upon the amount of irritation that exists in the case. It may, however, be considered as a universal symptom, is often productive of severe pain, and will, in many instances, be suppressed if possible.

In those cases of a more marked congestive character, there will be observed only a slight cough, but on the return of the circulation to its more natural condition, and consequent admission of air more freely into the minute cells of the lungs, more or less of a troublesome cough will appear, and often become a matter of considerable anxiety to those who have watched the progress of the disease. It may not, however, be considered an unfavorable symptom, especially if there is with it a decline of febrile action.

The *expectoration* in the early stage is frothy or bubbly, but it shortly becomes highly tenacious, and more or less streaked with blood; exhibiting, in some instances, a bright florid appearance, while in others it is of a darker and more venous character. In those cases where the physical symptoms indicate a greater degree of congestion, the sputa will exhibit a rusty appearance; while in those of a more purely inflammatory character the expectoration will be more florid and bloody, and in some instances a considerable quantity of pure, fresh blood will be thrown off.

During the progress of severe and violent cases, we occasionally find a "flag of truce" is presented, by which the unwary physician is very apt to be misled. Under such circumstances, the expectoration becomes opaque, and more copious, and the lips break out extensively with what is usually termed fever or "cold" blisters, and this symptom often accompanies

yellow hue. The pulse is usually full and forcible, but not very frequent. The bowels, in the early stage, are generally costive, but are apt to become quite sensitive, easily operated upon by cathartics, and often attended by a disposition to diarrhea. The urine is always scanty and high-colored, and in those cases associated with torpor of the liver, it will be changed to a yellowish-brown color; which appearance I have always watched with great anxiety, as exhibiting the earliest symptom of a decline in the disease; for, though you may not discover any particular change in the general or physical phenomena connected with the case, if you find the urine on cooling deposits a sediment, you may look with great confidence for a decline in the more palpable symptoms of the disease soon to follow.

Though the general symptoms which inflammation of the lungs usually develop, are to a considerable extent diagnostic in their character, and may with some confidence be relied upon, the physical signs connected with it are more than paramount, and should never be neglected, more especially since we are occasionally presented with a case in which the more ordinary symptoms are absent, and in which the physical signs alone are to be relied upon as pointing to the condition of the organs. Physical examination is also a matter of much importance in the treatment of this class of diseases, when occurring in children, since the ordinary appearances can not or will not be found to exist. The expectoration will not be thrown off, and pain in the side, unless very severe and acute, will not be manifest.

Percussion, in the early stage, does not yield that satisfactory evidence which at a later period it affords, yet in connection with the phenomena of auscultation becomes important. In the early stage before the substance of the lungs becomes engorged, and the air vesicles obstructed, very little dullness will be observed, and it is only by the most careful comparison of the healthy and diseased sides, that any difference will be detected. But a careful auscultation, either by direct application of the ear, or through the intervention of the stethoscope, reveals, with great certainty, the real

sound can be heard by causing the patient to answer a question while you are listening with the stethoscope, or the ear, on the part involved in disease. Besides this peculiar symptom we have another pointing to the same condition. By placing the hands smoothly upon the patient's chest, while he is speaking, a very distinct vibratory or jarring sensation will be communicated to them.

I have thus given you the general, and, to some extent, the more minute symptoms that characterize this disease, as well as the physical phenomena connected with its various stages. I have endeavored to note more particularly those symptoms which may be considered diagnostic, and have perhaps omitted many which can be found enumerated in detail in the authorities.

If the disease declines, either from appropriate treatment, or the natural efforts of the system, in its early stages, you will find a corresponding decline in the general symptoms characteristic of it. The crackling sound which is peculiar to the early stage, will give place, in a very gradual manner, to the healthy vesicular murmur present in healthy lungs. Accompanying this will be a more free expectoration, more or less changed in its character from the transparent, frothy or bloody appearance which it exhibits in the commencement of the disease, to that of a more thick, opaque and copious character. But where the disease has progressed until a complete engorgement or hepatisation of the lung has taken place, developing the dullness on percussion, the bronchial râles, and the peculiar sounds presented by vocal auscultation, then, as it declines, we shall have a profuse mucous secretion, accompanied by the heavy mucous râles, a gradual decline of the bronchial sound, and a simultaneous gradual return of the healthy murmur, associated with the crepitant or sub-crepitant sounds of the early stage. Under such circumstances we may expect to find a corresponding decline of all the symptoms of active disease which have been described as associated with it. The hot and parched or dry state of the skin will give place to a more moist and cool condition, the pulse becomes less frequent, more full and soft, and the urine

owing to the constant change that is liable to take place in a cavity thus formed, by the frequent expansion and contraction which respiration necessarily produces. But where there is considerable adhesion in the cellular tissue surrounding the abscess, the difficulty is measurably removed and a union is more likely to occur. If the accumulation of pus is extensive and points to the pleural cavity, and discharges there without an opening through the walls of the chest, by which its exit may be made, inflammation of the membrane is certain to follow, and the patient finally sinks in a state of suffocation. But where adhesion takes place between the two pleuritic surfaces, and the abscess points toward the surface, through the intercostal spaces, and is there evacuated, then, as previously remarked, if the inflammation is circumscribed in its character, adhesion of the walls of the abscess may follow, and the patient recover.

The modification of this disease known in the books as bilious pneumonia presents no very striking symptoms in its progress, except those that are dependent upon, or growing out of, a diseased condition of the organ with which it is associated. It is, in short, the same disease, or a mere modification of it, with these bilious symptoms superadded. In this case we have pain in the side and region of the liver, with tenderness on pressure in that region, usually yellow skin, a more dark and yellow appearance of the urine, and a more yellow appearance of the expectoration, with an icterous color of the eyes. Such cases will be found to occur most frequently late in the fall, or early in the spring; and the febrile symptoms, associated with it, will universally present a more distinct periodical character. One modification of this disease, however, from its frequent occurrence, and more especially from the distinct consideration given to it, by most writers upon this subject, requires at least a passing notice. And though I consider it as merely an accidental concomitant, from the symptoms it presents as generally occurring, it requires a corresponding modification in treatment. I refer particularly to what is called *typhoid pneumonia*. The term *typhoid*, as used by modern authors, is not applicable, as a

diathesis, we should have far more reason to anticipate a softening of the tubercles already existing in the lungs, and a termination of an unfavorable character, if not speedy, yet slow, but not less sure and fatal. If in addition to this we find an extensive inflammation of the substance of the lungs, connected with whooping cough, or growing out of epidemic influence, or associated with contagious disease, it presents a far more unfavorable aspect of the case. Hence the necessity of carefully considering and properly weighing all the attendant circumstances and conditions of every case that may be presented.

Causes. Among the most common exciting causes of this disease may be mentioned atmospheric vicissitudes; this is especially the case in all inflammatory affections of the chest, if the system is previously relaxed and exposed to a direct draught of air. We have, this season, had a number of notable instances, where the individual had got into a free perspiration from severe labor, and sat down to rest with his coat off. Suppression of long continued or habitual discharges or evacuations may be numbered among the causes of this disease; and it is said that the sudden transfer of gout or rheumatism to the lungs has been known to produce it. I should apprehend, however, that under such circumstances the case was mistaken for neuralgia of those parts. There are, however, other diseases which predispose the system, in many instances occurring in a severe form, and positively developing inflammatory action in the lungs. Among these may be mentioned measles and whooping cough, and possibly smallpox and scarlet fever. Most of the cases occurring in this western country will be found associated with symptoms of a periodical character, clearly pointing to the atmospheric condition as greatly modifying the attendant inflammation. In fact a large majority of all the cases of this disease, that I have met with in an extensive range of practice, have been most palpably associated with symptoms usually supposed to be produced by malarial poison. Those idiopathic cases dependent entirely upon cold, or produced and kept up by it, unconnected with consumption, have been

portion of the lung is of a deep red color, crepitates under pressure, though less than in health, retains the impression of the finger, and when cut, exudes copiously a bloody, turbid and somewhat frothy serum. It is more compact and heavy but less tenacious than in health, and, notwithstanding its increased density, still floats in water. The cells are not yet obliterated and, though somewhat obstructed by extravasation, still contain air. The condition altogether very much resembles the mechanical congestion occasioned by the gravitation of the blood after death, or at the close of life; but the color is usually of a brighter red, and the softening greater. The position of the congestion may also sometimes aid in the formation of a correct judgment; as, if mechanical, it must occupy the most dependent part of the lung, which is not necessarily the case if it is vital. If the disease be arrested in this stage, the lung reassumes a healthy appearance; if not, it passes into the condition described in the following paragraph.

“The *second stage*, named by Laennec that of *red hepatisation*, by Andral that of *red softening*, is characterized by a deep red, reddish-brown or grayish-red color, the absence of crepitation under pressure, a density so much increased that the diseased lung will sink in water, and a diminution in cohesion still greater than in the first stage. The grayish color sometimes observed is owing to an intermixture of particles of the black pulmonary matter, and to the lighter hue of the interlobular tissue, which is occasionally less congested than the other parts. The softening is so great that the lung may be readily torn, and the finger may be passed through the parenchyma with little resistance. It is greater in proportion as the inflammation has been more acute and recent. When cut into, the lung bears a striking resemblance to liver, and on this account is said to be *hepatized*. When pressed between the fingers, it exudes a reddish fluid, which is thicker, less frothy and less in amount, than that observed under similar circumstances in the congestive stage. The cut or torn surface of the lung generally exhibits numberless minute granules, which are probably the air-cells filled and

times but not always distinct. They are in fact often more or less commingled." Again, in speaking of typhoid pneumonia, he says, "When pneumonia is associated with a low or septic state of the system, the disease appears sometimes scarcely to pass the stage of congestion, or, if it does so, the blood remains liquid and yields none of the plastic secretion which gives solidity to ordinary hepatization, and the inflammation, if it continue, is apt to run into gangrene or imperfect suppuration," etc.

Again, Alexander Tweedie, in his voluminous work, "The Library of Practical Medicine," says, in speaking of the anatomical characters of this disease, "The first condition produced in the lung by inflammation is sanguineous congestion or engorgement, in which the vessels are then so much distended, that the whole tissue appears red, of different shades, and is much heavier than usual, but still crepitates," etc. "The second stage of pneumonia, red hepatization as it is called, brings the lung to a state of solidity more or less approaching that of the liver. But the transition from the first stage to the second is not sudden, but gradual, being the result of the same overflow of the nutritive function which causes the effusion of lymph in the inflamed pleura. * * * The third stage to which inflammation brings the lung is that of suppuration or yellow hepatization. This consists in the conversion of the semi-solid particles of lymph or blood, which constitute the solid or red hepatization, into an opaque light yellowish, soft, friable matter, and finally into fluid pus."

Other and generally respectable authorities might be cited, all stating the same facts, and in almost the same

- . But sufficient, I trust, has been shown to satisfy
- o regard to the fidelity with which these observations post mortem appearances have been recorded. It
- erved in these quotations that there are no appearances
- h indicate that the condition of the parts involved
- analogous to the popular idea of the term inflammation
- condition of the vessels upon which the process of blood-letting was alone, in its early history,

LECTURE XLVI.

PNEUMONIA—CONTINUED.

*Treatment — Bleeding improper — Experiments of a German physician — Proper treatment given — Cause to be removed — Correct the
stions — Emetics — Cathartics — Hepatic treatment, when necessa-
-Expectorants — Recapitulation — Treatment, when complicated —
iodicity — Bilious symptoms — Typhoid form.*

atment. In discussing the treatment of this disease, I shall again be pardoned for referring to the conflict of theory which I entertain, and upon which I predicate I believe to be sound and correct practice, with that which is so uniformly and earnestly advocated by most of the authorities. Blood-letting, in all cases either of a distinctly inflammatory or of a congestive character, holds the most prominent and important position with the profession; and although I may be considered arrogant and presumptuous, in questioning opinions of able and eminent men, I must nevertheless be permitted to follow the course and to recommend those measures which I have found, by a careful and disinterested investigation, to result so favorably in the treatment of this disease. I am compelled, therefore, to yield those feelings of respect and confidence, that I otherwise should have for opinions originating from so numerous, learned and respectable sources, in the present instance, to convictions resulting from direct experiments and comparisons in the premises. And I can reconcile the long continued and numerous concurrences which we find in the books relative to the treatment of inflammatory diseases, to a practice that has most lamentably sacrificed the destinies of the profession,—that of following the steps of those who have gone before.

the cause that has produced it; this being done, the treatment naturally suggests itself, which, if in accordance with the physiology of the system and the philosophy of the case, ought rarely to fail of success. It will be remembered that, in speaking of the causes of this disease, atmospheric vicissitudes were found most commonly exciting it. Although this may be considered an intelligible expression in common parlance, the philosophy of its effects on the human system requires, perhaps, a little further explanation. It may be said, then, to be a sudden abstraction of heat from the body, by which the system, or a portion of it, is lowered in its temperature, producing a loss in the balance of the circulation. In consequence of this a determination takes place to some organ of the body previously disposed to disease. Directly dependent upon this condition of the system will be found a general diminution in all the secreting functions, by which a large amount of stale, effete matter is retained in the circulation, which adds greatly to the difficulties of the case. The determination to any particular organ of the body, under such circumstances, will depend entirely upon the predisposition to disease in that particular organ. In some, the bowels will be found the point of determination in all cases of exposure to cold, while in others the liver, lungs, throat, etc., will be the point of attack.

Since, then, we have in the disease under consideration, causes in most cases which have brought about a very marked derangement of all the secretions, the first and most important consideration will be to *correct the secretions*, and thus bring about an equilibrium in the circulation, and relieve the system from the loss in the balance of those important fluids, which the exposure has produced. In many mild cases, simply bathing the feet, in addition to the use of such simple measures as shall secure a copious and general perspiration, and the use of mild expectorants, will be found to accomplish all that is necessary. Hot bricks to the feet, and the internal administration of drachm doses of sudorific tincture, or *in ten grain doses, repeated at intervals of* by a decoction of *sceloporus tuberosa*,

chia, and three of sanguinaria, divided into three portions, one of which may be administered every two hours, will be found a very reliable remedy to fulfill the latter indication. Or the ingredients above mentioned may be made into a pill with the extract of taraxacum, and given at little longer intervals, when a very prompt and free effect upon the bowels is not desired.

In former times I was much in the habit of administering, as an emeto-cathartic, with the most satisfactory and successful results, ten grains of pulverized podophyllin with four of ipecacuanha, and repeated in two hours if its emetic action was not produced. But from its peculiarly nauseating, sickening and relaxing influence, I have not latterly as often administered it, though when used, I have scarcely ever been disappointed in breaking down the entire force of the disease. When thus administered, very copious bilious evacuations will be witnessed. A physician of extensive experience remarked to me, on one occasion, after he had witnessed its effects in a number of cases, that I accomplished more with it in twenty-four hours than he had been able to do in a week with calomel and the lancet. Hot fomentations with bitter herbs, or hops contained in a flannel bag and wrung out of hot water, should never be omitted in these cases. These active measures should be followed, in those cases where it is found necessary, with less perturbing but quite as efficient means. The sudorific tincture, heretofore directed in milder cases, may be given, which, accompanied with the free use of the decoction of asclepias, seems to exert a very happy influence in determining to the skin, and in increasing the urinary secretion. In most cases these measures will be found all that are necessary to a complete removal of all the active symptoms, without even resorting to their repetition. If, however, the symptoms seem to require it, any one, or all of them may be repeated. In most cases, where a slight continuance of the symptoms should be found to persist, a gentle but efficient cholagogue cathartic, with the moderate use of diaphoretics and expectorants, will be all that is necessary.

Though we by no means ascribe that controlling importance

issue in the case ; and obstinate, indeed, must be the disease and slow to respond to the call for healthy action must be the system, that does not yield to all the depurative measures here recommended, and following in such quick succession.

The most common, and by far the most important, complication connected with this disease, both as regards the organs involved, and the symptoms which it usually presents, as well as the modifications of treatment which its proper consideration almost necessarily implies, remains now to be considered. I refer to *periodicity*; which, in this country, is found by careful observers to modify almost all forms of disease. When we consider the circumstances, and the time of year during which these more severe cases occur, my views cannot be considered either strange or unreasonable, or in any way incompatible with the origin and influence of malaria in all those extensive miasmatic districts where autumnal fevers are most rife and severe. The occurrence of a warm open period in winter, or a similar state on the approach of spring, with sudden change to cold, etc., are the circumstances under which severe cases of this kind are most frequently found ; it is under such circumstances that periodical attachment in pneumonia and other inflammatory diseases occurs. How, then, shall we proceed to its removal ?

When a case of pneumonia is presented to you for treatment which is characterized by the periodical influence, you will find that this influence extends not only to the exacerbations and remissions of the fever, but in a greater or less extent to all the symptoms of the disease. In the treatment of such cases, of course a resort must be had to all those means used in simple or uncomplicated cases, such as cups thoroughly applied to the seat of disease, fomentations, expectorants, and, where necessary, emetics and cathartics. But it must be borne in mind that we also have this great and controlling influence to overcome, which must be done, if circumstances make it necessary, even to the neglect of other symptoms. The valuable time of a remission should not be spent in waiting for the slow action of cathartics, or any other means that will occupy much time, at this particular juncture very

diately occurs after the first or second dose, which seems to exert a greatly controlling influence upon the exacerbation which would otherwise uniformly occur, but which, if not altogether prevented on the first occasion, will be sensibly deferred, and in the second in most cases entirely prevented.

It is in this modification of the disease that we find those symptoms of a *bilious* character giving to it the phenomena of what is termed bilious pneumonia; and it may be necessary to continue the use of the cholagogue remedies, or apply them with more efficiency, after the febrile symptoms have been entirely relieved. Under such circumstances, a pill composed of podophyllin one fourth of a grain, leptandrin one half a grain, and extract of taraxacum sufficient to form a mass, should be given once or twice a day, until its full and free action upon the liver is brought about. This will be very much aided in its influence by the use of an expectorant prepared of a decoction of sanguinaria, senega, and eupatorium, with the addition of loaf sugar sufficient to make a syrup, and taken in drachm doses every few hours, or oftener, if the patient is harassed by a harsh or tickling cough.

In all cases presenting those low and nervous symptoms characteristic of what is termed *typhoid pneumonia*, whether occurring early in the case or late in its progress, or whether associated with bilious symptoms or not, it is a matter of importance to use active cathartics with great circumspection and care. In fact I have great doubts whether an active or drastic cathartic in these cases is ever attended with any good results. When, in addition to the above symptoms, the periodical character of fever is found to exist, as a substitute for the quinine and iron, the valerianate of quinine will be found a very valuable and excellent remedy. It should be given in two grain doses, to an adult, in all those cases, and under similar circumstances, where we have before recommended the other remedy. It will be found upon careful observation, that in most of the cases presenting the typhoid symptoms as they are called, the tongue will present on its tip and edges, and even on its whole surface, a highly

heat of the skin is scarcely above the natural standard in the ~~some~~ ^{some} ~~document~~ ^{document} of the case. In such cases a resort to active cathartics, or sometimes even to mild aperients, will not be admissible. Reliance must be placed upon the anti-periodic measures, with direct stimulants, and the local treatment before spoken of.

In some cases, after the anti-periodic remedies have been pretty thoroughly administered, so that the force of the disease is mainly, but not entirely, arrested, it will be found that, after suspending the measures for a day or two, the fever will manifest itself in a distinctly intermittent form. The anti-periodic measures should be immediately resorted to again in large and repeated doses, when the most happy results can with perfect confidence be expected.

Frequently, after the suspension of the anti-periodic remedies just referred to, a slight fever of irritation will continue for a number of days, requiring and indeed bearing only the mildest treatment, which eventually manifests the periodical character, and should be met as above directed.

From what I have said on the subject of the administration of quinine and iron in the treatment of this disease, and *especially* taken in connection with what I have so often said of them in relation to other diseases, I suppose it scarcely possible that any misapprehension can exist. But for the purpose of securing the most unequivocal appreciation of my views, I will reiterate that their administration is *alone* to be governed by the demand, as indicated by the symptoms of malarial influence; preferring the manifestation of a remission, however slight that may be, for the commencement of their use—and that no inflammatory complications present any objections, where their use is otherwise indicated; having in hundreds of instances thus administered them, without any aggravation of the inflammatory symptoms, but, on the contrary, with usually manifest benefit in this respect.

I do not however, let me further add, consider those remedies the most appropriate in the uncomplicated inflammatory diseases; but I recommend their use as favorably influencing inflammatory action, only in those cases complicated with

LECTURE XLVII.

PULMONARY EMPHYSEMA.

*General remarks — Generally a secondary affection — Symptoms —
Physical signs — Morbid appearances — Causes — Prognosis —
Treatment.*

ASTHMA.

*Definition — Characteristic symptoms — Physical signs — Causes —
Prognosis — Treatment.'*

The term *pulmonary emphysema* is used to indicate an inflated or distended condition of some portion of the pulmonary air-cells, or that condition in which the air has either escaped from the proper vesicles of the pulmonary structure into the intercellular tissue, or has been diffused upon the surface of the lungs beneath the pleura. It rarely occurs as an original affection, but, in association with pulmonary diseases, is, no doubt, quite common. When confined to a small portion of the interlobular structure of the lungs, the indications of its existence are very equivocal and not readily recognized. But when it occupies a considerable portion of the substance of the lungs, and especially if it extends to the surface of the pulmonary substance, there will be no great difficulty in determining its presence.

Symptoms. This disease so generally supervenes upon, or is produced by other and often grave affections of the lungs, as to render it very liable to be overlooked until it has progressed to a considerable extent. Thus, dyspnea is one of the special symptoms of emphysema, and yet it so often occurs in other affections of the lungs that a physician, who

aëration of blood, and in severe cases the face, lips, and fingers exhibit more or less constantly a dark or purple hue. Sometimes the paroxysm is so severe as to produce an irregular action of the heart, and signs of hypertrophy in that organ. The constitutional disturbance is by no means commensurate with the local difficulty, although it is a severe affection and often produces great uneasiness and distress. Thus, when uncomplicated with acute inflammatory action, the pulse is slow, though sometimes irregular, and the skin does not greatly vary from its ordinary temperature. But it is rare to find its early stage free from symptoms of a more general character, since the affection almost always results from antecedent organic derangement of the adjacent bronchial mucous membrane.

The *physical signs* of this affection are more characteristic and reliable than those we have been considering. In extensive emphysema the abnormal expansion of the chest, greater than is produced by almost any other affection, is at once suggestive of the condition of the lungs. One or both sides of the chest will appear prominent, according as the internal dilatation is confined to one or extends to both lungs, and the intercostal spaces over the parts involved will be more full and prominent than usual. But the surest indications will be afforded by auscultation and percussion combined. One of the most unequivocal signs is the remarkable hollow and loud sound emitted on percussion, which, however, is not that entirely hollow sound characteristic of an extensive cavity resulting from an abscess, but a resonance greatly increased above a normal or healthy one. This will often be extended to portions of the chest ordinarily yielding a dull or very obscure resonance. In some instances the lungs become so extensively involved as to displace the adjacent viscera, and thus give rise to a resonant sound over the region of the spleen and liver. It is no doubt owing to this swollen and stuffed condition of the lungs, causing pressure upon the heart, that those symptoms of cardiac disease, which are frequently present, are produced. But it not unfrequently happens, in connection with the increased reso-

condition of the lung may be quite extensive, or it may be limited and mainly confined to a single lobule.

While this condition of the vesicular substance of the lungs will be presented, the adjacent bronchial or air tubes will rarely be found free from evidences of morbid action antecedently existing, or from the foot-prints of more recent acute disease. Thus either a thickened or highly engorged state of their mucous surfaces, or a sensible hypertrophy of the longitudinal fibers of these tissues, accompanied with considerable contraction or diminution in their caliber, will be found, though in some instances the tubes will be expanded and attenuated, while the pulmonary tissue will be soft and flaccid, presenting a paler appearance than usual.

The terms *extravesicular* emphysema and *intervesicular* emphysema, have reference to the situation of the distended air vesicles, or the engorged condition of the intervening cellular structure, and so far as we are now apprised have no practical value.

Cause. It may be said with truth, no doubt, that this disease rarely occurs as a primary affection, but results generally from previously existing disease of the small bronchial tubes. Hence, it frequently follows catarrhal affections in which a partial obstruction of the small bronchial tubes has taken place, and on account of which an unusual effort is required, upon any considerable exertion, to supply the requisite amount of air for the demands of the system. In this way the air vesicles become expanded. It often results also from extensive obstruction in a portion of the pulmonary substance, in consequence of which a portion of the lungs is required to perform the function of the whole. Thus it often occurs in children affected with congestion of a portion of the lungs. It has also been produced by intense muscular effort in which an extraordinary respiratory movement is required, such as active and protracted tussling, or lifting and carrying heavy burthens, in all which efforts full and unusual expansion of the air vesicles takes place. It may likewise result from long and violent fits of coughing, such as frequently occur in whooping cough, and some cases of bron-

particularly against rapid motions, against ascending flights of stairs, lifting, or otherwise exerting the muscular system in any way that would require a more than ordinary inflation of the lungs. A uniform temperature is also important; to secure this end the patient should keep warmly clothed, wearing flannel next the skin, and guarding against every exposure liable to produce cold, such as wet feet, sitting in a draft, etc.

The condition of the bowels should receive special attention. You should particularly avoid the administration of active purgatives, while it is not much less important to keep up as natural and healthy an action as possible, in order to promote healthy assimilation, and prevent morbid accumulations. When the bowels are costive, and there is no evidence of febrile action, the gin or Bones' bitters will fulfill the indications of an aperient, tonic and diuretic, better, perhaps, than any compound known to pharmacy. In connection with this preparation, chalybeates, such as the muriated tincture of iron and soda, should be given two or three times a day.

But when inflammatory symptoms are indicated by heat of the skin, hurried respiration and excited pulse, cups may be applied over the parts involved, followed by hot fomentations and the occasional administration of more free cathartics, the frequent use of the sanguinaria and lobelia syrup, and appropriate doses of a solution of strychnine. To relieve the urgency of symptoms frequently occurring, a pill of camphor and hyoscyamus may be given three or four times a day. These measures should be repeated and persevered in until the symptoms for which they were prescribed have been in a measure relieved, when a syrup of the euonymus atropurpureus should be prepared by steeping an ounce of the bark in a quart of water and, after straining, adding sufficient loaf sugar to make a syrup, which should be given in table-spoonful doses three or four times a day. In this preparation we have an excellent aperient and tonic, as well as a diuretic, and at the same time it appears to exercise a specific influence on the pulmonary organs conducive to healthy action.

affections are generally more gradual in their approach, and consequently the attendant spasmodic action is less marked and severe, while the general constitutional symptoms are sufficiently diagnostic. It is, therefore, only those cases of spasm of the bronchial tubes, in which few if any constitutional symptoms are present, and inflammatory or congestive action, especially, is absent, that should be designated as asthmatic. We cannot, however, exclude in this explanation

grade of local irritation, which may, in severe and persistent cases, develop a true state of inflammatory action, thus changing the character of the disease.

I have little doubt that cases do frequently occur of a purely nervous character, in which even the associated irritation usual to asthmatic affections is wanting. Thus those cases occurring in temperaments of a highly nervous character produced suddenly, without a moment's premonition, by a peculiar odor, the smell of ipecacuanha, close rooms, irritation of the stomach, sudden mental emotions, and other influences operating powerfully on the nervous system, are of this character, and it can scarcely be doubted, if the true condition were determined, that they would present few or no evidences of irritation.

The *characteristic symptoms* of a paroxysm of asthma are, however, frequently preceded for some days by evidences sufficiently distinct to indicate to the asthmatic subject the approach of an attack; though in other cases the paroxysm is either so insidious or sudden as to take him unawares, coming on frequently in the night, and as suddenly as an attack of spasmodic croup. The individual starts up from his sleep with a sense of constriction in the lungs amounting to a feeling of suffocation, and rushes to a window for fresh air as for his life. Nor does this entirely relieve the difficulty, as an oppressed and wheezing effort at respiration, often heard at a considerable distance, continues for hours, accompanied by a sensible contraction of the chest, and a remarkable hollow in the epigastrium produced by the elevation of the diaphragm. In this condition, it is no unusual occurrence for individuals to sit all night at an open window,

a paroxysm, and not unfrequently follow its decline. A sense of fullness and weight in the epigastrium is often complained of after eating, and is followed by gaseous eructations. A peculiarity often attendant upon the disease is a tendency to distinct periodical recurrences every night—subsiding mainly through the day—for a week or longer, which clearly fixes the neuralgic character of the attack.

Physical Signs. The true condition of the lungs in asthma is very well shown by a physical examination. Percussion in the uncomplicated cases will generally be found nearly as resonant over the entire chest as in health; while the usual sounds afforded by auscultation will be greatly obscured even during the most violent efforts at respiration, only a faint and indistinct respiratory murmur, with here and there a wheezing or sibilant sound, will be heard. But as the spasm subsides, and air is more freely admitted into the lungs, a more natural respiratory murmur will be recognized, and if mucous secretion takes place, more or less of the moist râles will be heard. These sounds, however, appear to change as the spasm of the bronchial vessels is more or less severe. The cases which have come under my personal observation have generally presented an increased expiratory sound, often exhibiting the distinct wheezing sound which is heard on inspiration as the disease subsides.

Few diseases which continue so long produce less serious effects upon the general health than uncomplicated asthma. It is not unfrequent to meet with individuals who are vigorous and healthy in every respect except a liability to occasional attacks of asthma, and who thus continue through life to a good old age. Yet it does not follow that the influence of asthma is particularly conducive to longevity or good health, and the only safe inference we can draw is that such persons are remarkable for soundness of constitution, and a general healthy state of the system in every other respect. This is confirmed by the fact that persons differently constituted, with either an hereditary or acquired predisposition to disease of the lungs or of other important organs, frequently find premature graves from complicated asthmatic affections.

disease will be found in which more or less tenderness in the roots of the spinal nerves will not be detected by careful examination. The excitability of the nervous system attendant upon excessive sexual indulgences seems often to create a strong predisposition to asthmatic attacks. There are also other predisposing influences, such as intense mental affections or strong passions, and protracted and severe illness involving the nervous system, etc.

Among the *exciting* causes, those connected with derangement of the stomach are perhaps the most common. So intimate is the connection between the condition of the stomach and paroxysms of this disease that there are but few of the purely uncomplicated cases which will not escape the periodical recurrences, to which such cases are particularly liable, by strict care and attention in diet and drinks. Another very common exciting cause is atmospheric change. It probably occurs more frequently in the more northern and colder regions, yet it is very common during the warm, damp and changeable seasons in other regions. It is often produced, when a predisposition exists, by a sudden exposure when the system is relaxed by perspiration, or by exposure after taking a warm bath. It has also been excited by sudden and unexpected intelligence, and by strong mental emotions. Some persons who are subject to the disease cannot endure the odor of ipecacuanha, and some particular plants, or the smoke of tobacco, or a smoky chimney, while others appear to enjoy the utmost immunity from its paroxysms in the midst of smoke and dust. There is sometimes a peculiar mustiness in hay when stirred that is very liable to excite an attack of asthma in those predisposed to it. It is said likewise to be produced by the suppression of habitual discharges, and the sudden recession of cutaneous eruptions, from the continuous sympathy existing between the skin and mucous membranes. And, in short, asthmatic paroxysms may be produced by the contact of any irritating substances with the bronchial mucous membrane, or by any other influences producing a similar condition.

This affection cannot be said to be peculiar to any period of

If, then, the exciting cause is satisfactorily ascertained to be derangement of the stomach, whether from an immediate excess in eating or drinking, or whether it has been brought on more slowly by less apparent indulgences, the most prompt relief that can be expected from any measure will be realized from an efficient emetic. Few diseases are more sensibly influenced by the kind of emetics used than asthma, and happily on this point we find a greater concurrence of opinion among medical men than is usual. Lobelia is generally conceded to answer a better purpose in this case than any other article. Dr. Wood says, "I think I have derived more advantage from it than from any other single remedy." One of the most appropriate methods of administering it is in the infusion with boneset. Perhaps an equally efficient preparation is the acetous tincture of lobelia and sanguinaria. These remedies should be given in two tablespoonfuls of the former, or one of the latter, every ten or fifteen minutes, till free vomiting takes place. It may be well in severe cases to give small but nauseating doses for half an hour or so, for the purpose of producing relaxation of the spasm, as in this way the emetic is more likely to operate, and produce more perfect relief than it otherwise would. Our common emetic powder,* infused in a half pint of warm water and allowed to settle, may be given in the same way, gradually increasing the doses. If the paroxysm is not entirely relieved after the contents of the stomach are evacuated, a cup full of clear coffee may be taken, and generally with decided benefit. But should the symptoms seem persistent notwithstanding the emetic, the system may be kept constantly under the relaxing influence of the lobelia in small doses. For this purpose a few drops of the alcoholic extract may be given every half hour on a lump of sugar. These measures may be assisted by the application of a large sinapism both on the spine and the breast; and if much restlessness and nervous irritability accompany the case, a teaspoonful each of sulphuric ether and red drops

* R Lobelia and ipecacuanha, aa 3ij.

Capsicum, gr. x. Mix.

of course, be instituted at once. When the paroxysm recurs every night, the patient being comparatively comfortable during the day, or when the history of the case shows a decided periodical character in other respects, you may rely upon the quinine and iron, giving it freely or in sufficient doses to produce the desired effect.

For the purpose of breaking up the morbid influences concerned in predisposing the system to irregular attacks of the disease, every circumstance calculated to sustain them should be ascertained and removed if possible. The habits of the patient should be inquired into and regulated. The diet should be restricted to a regular, simple, and nutritious regimen. Strong tea and coffee should be limited, if not entirely prohibited. Hot bread and biscuit, pastries and high seasoned food should be strictly forbidden; while stale bread, roast potatoes, bread and milk, if agreeable to the stomach, rare done beef and other digestible meats, and such other plain and digestible articles as experience or the habits of the patient may suggest, should be allowed. The patient should keep out of the night air, avoid all exposures, and abstain from habits of dissipation, such as late suppers, and extremes of every kind which experience and good sense point out as not conducive to good health and longevity.

The patient should be directed to bathe the whole surface once a day in cold water, or whisky and water, as the capacity of the capillary circulation will indicate, following with brisk friction to induce a healthy action of the skin. A large amount of exercise in the open air should be taken every day in order to secure a free state of the circulation, and inure the bronchial mucous surface to those influences liable to disturb the natural action, if not accustomed to atmospheric changes.

While all these measures are being carried out, other remedies, adapted to fulfill the indications which the case presents, should be administered. The most effective remedy I have ever used is the *euonymus atropurpureus*, (wa-hoo, or Indian arrow,) which fulfills many important indications, and produces, as I apprehend, some specific determination to the parts involved in this affection. A syrup is prepared

Little doubt can be entertained that the relief afforded by homœopathic prescriptions in these cases is entirely referable to abstinence from every kind of stimulant and condiment; while the diet is changed from a great variety and excess to one of a plain, simple, and digestible character, and that at regular intervals and in reasonable and appropriate quantities. And it is but little less doubtful that the success of the hydropathic treatment finds an equally satisfactory explanation, not in the curative influence of water—though that is indeed an important adjuvant in the treatment of many affections—but in the simple character of the diet, the regularity of habits in every respect, and the large amount of out-door exercise, all of which constitute important features in the *curriculum* of hydropathic institutions, thus teaching an invaluable lesson to the world and the profession that the recuperative action of the system, when unembarrassed by artificial habits and unnatural interference, is competent to accomplish important results.

it were not that it is generally the mature, the beautiful, the talented, the gifted with genius, who fall its victims, we might not find so much occasion for the promptings of sympathy, and of an earnest anxiety to discover more successful means for staying its fatal course.

“ But,” says the same author, “ the subject, considered in this comprehensive manner, possesses a degree of importance unquestionably beyond any other in the whole range of medical science; and I do not hesitate to express my conviction, that in proportion as the medical practitioner is acquainted with the remote and exciting causes of tuberculous disease, so will he be enabled to treat successfully a large number of the cases which come under his care. The increasing tendency to this disease, and the greater frequency of its occurrence, are additional reasons for renewed efforts on the part of the profession for more successful treatment, especially in its early stages, than has hitherto attended the practice of any. And we can but hope that future investigation in the chemical and vital principles of animal life, will render consumption in all its early stages as amenable to a course of medication, as malarial fever is to quinine.”

The subject is of inconceivable interest to the whole human race, and though it cannot be expected that I shall be able to give to it as elaborate and extended a consideration, in all its relations, as might be done in a treatise exclusively on this subject, I wish nevertheless to be able to impress upon your minds the great leading truths as far as they are determined, hoping that they may lay the foundation for further research and observation by some members of the class, and secure at least the general dissemination of what past research and experience have effected. And I cherish a reasonable hope for future success in treatment far beyond the present claim that the most successful have any right to make. In view of the important truths which modern improvements in pathological research and therapeutic appliances have brought to light, there is much to encourage us. While the disease was considered as merely local in its character, and while no attention was paid to those prophylactic measures

it may be accidentally or otherwise developed at almost any period of life. The manifestations of this state of the constitution will be seen in almost every part of the system, not only in the physical conformation, but also in the expression of the countenance, the color of the skin, hair and eyes, and even the gestures and movements of the individual. In the child it will be observed by the pale and full appearance of the cheeks, and often the upper lip will be tumid, while the color will depend somewhat on the natural complexion of the individual. In children of a brunette complexion, the appearance of the skin will be of a sallow or bilious hue, while those of a light or fair complexion will exhibit a peculiar transparency and waxen appearance of the face. At a later period the eyes have a full and prominent appearance, with a mild and amiable expression, associated with what might be called beauty of countenance. The form of the body will exhibit no very peculiar appearances; though generally full, but of a remarkable softness of texture. But as the disease advances, a manifest disproportion from the symmetry of form usual in other cases will be seen. The limbs will be long, and their muscles lax and soft, or unusually large and disproportioned, while the chest will be small and contracted, and the head large; and in more marked cases there is often a sensible crook or curvature of the spine, sometimes amounting, if not arrested by appropriate treatment, to great deformity.

When shown at this early period, the physical development will be slow and irregular; the circulation will also be imperfect; the feet and hands though moist will incline to be cold; while the pulse will be weak and feeble. A peculiar sprightliness of character and precocity of intellect are no uncommon associates of these physical manifestations.

This weakened condition of the physical system is not, however, a universal attendant on or a concomitant of this serofulous diathesis; as it may be first developed in the fluids of the system, some time previous to its manifestation in the more solid structures.

As must naturally be inferred from this imperfect develop-

as marking the "victim of the fatal scourge," to require any particular consideration here.

Such then are the appearances in the general conformation more particularly indicative of a scrofulous diathesis, before any symptoms will be observed which specially mark the stage of active disease.

It is obvious that the condition of the blood bears a most intimate relation to tuberculous formations. It is through the influence of the blood, affording as it does all the materials for the change and reproduction of the solid tissues of the body, that we must look for those changes inseparably connected with the removal of this abnormal state, and the restoration of disordered organs. Says Dr. Clarke, "The disease of the lungs scarcely predominates over that of the rest of the body, and the seat of the disorder is to be looked for in the fluids, rather than in the solid tissues."

The analysis of the blood made by different authors, in healthy as well as in tuberculous subjects, most clearly confirms the doctrines here set forth. Reference can be had to various writers for a more full explication of this subject.

With these preliminary observations I shall proceed to consider the course and symptoms of the disease, from its earliest manifestations, both of a general and physical character, to its final termination.

The particular change in the condition of the lungs, *immediately preceding* the earliest manifestation of the characteristic symptoms of tuberculous disease, is not well understood. We do know, however, that the serum and albumen predominate much over their ordinary healthy proportion in the blood, and render this fluid much more than usually plastic, and its circulation in the capillary vessels much weaker and more liable to be obstructed. At the same time the physical conformation, usually defective in such cases, presents an additional difficulty, and favors most remarkably any local determination that may accidentally be provoked to these parts. From these well defined predisposing circumstances, upon the occurrence of cold, or any other cause capable of producing a similar effect, a number of the air

dral report the left to be more frequently in a tuberculous condition, as observed by them. The observations of others have found no difference in this respect.

There are many other changes taking place in the lungs, following the deposit of tuberculous matter, and to a considerable extent dependent upon it; among which may be mentioned obstruction of the capillary circulation, with sanguineous congestion, resulting in serous infiltration of the interlobular cellular tissue. Other changes still follow upon the engorgement thus produced, and we find ulceration, softening, and inflammatory action resulting in extensive abscess.

Where the tuberculous formations are numerous and occupying a large portion of the lung, I have made post mortem examinations of many cases, in which the lung presented almost a solid or fleshy appearance when cut, and the cut surface thickly studded with small points of softened tuberculous matter.

Various theoretical opinions have been advanced, of very little practical advantage, in regard to the structure of pulmonary tubercles, and also in regard to the particular parts of these concretions where softening begins. That the tubercle is an inorganic substance is now generally conceded, but the manner in which softening occurs is not so well determined. Being inorganic, it is necessarily insusceptible in itself of inflammatory action, and hence some have thought that softening results from a kind of fermentation of its elements. But this does not account for all the phenomena. The most reasonable explanation is found in the contiguous inflammation excited in the organized tissue in immediate contact with this foreign substance, giving rise to a secretion of pus on the surface of the tubercle, which furnishes an element necessary for the change. This state of inflammation extends to the structure surrounding other neighboring tubercles, and finally the whole intervening parenchyma is gradually destroyed, and cavities are formed of variable size, until an entire lobe is converted into an irregular mass of cavernous and ragged tissues, presenting no trace of healthy pulmonary structure.

action either in the cellular substance of the pulmonary organs, or the mucous membrane of the bronchial tubes, or perhaps in the external surfaces of the lungs.

Not long subsequent to the appearance of cough and difficulty of breathing or shortness of breath, symptoms of a more general character, from sympathetic influences, make their appearance. The pulse becomes more frequent than natural, and often hard, especially toward evening and after eating. Chilly sensations will frequently be observed, even during the warmest weather, toward the latter part of the day, followed by more or less febrile reaction, with heat and dryness of the skin, which continues often during the early part of the night, with a troublesome sensation of burning in the palms of the hands and soles of the feet. These febrile symptoms, later in the disease, during the latter part of the night, are followed by a free and often debilitating perspiration. This febrile paroxysm is generally so slight during its early manifestation, as to be overlooked, but as the disease progresses more importance is attached to it, and the patient often becomes impatiently anxious for its removal, impressed with the idea that the chill and fever is the only difficulty in the case.

The digestive organs, being so intimately associated as they are with all vital action, begin, as might be supposed, even at an early stage of the disease, to show signs of derangement. The appetite will occasionally be good, but generally irregular and morbid; at one portion of the day voracious, at another entirely wanting. Sometimes there is a singular demand for articles of diet known to disagree with the stomach, and in other instances, only those of a rare, high-seasoned or delicate nature, will be acceptable. This fastidiousness of demand will be associated, as might be expected, with symptoms of indigestion no less variable and marked.

In some instances a sensible uneasiness, occasionally to the extent of positive pain, will be experienced after each meal, frequently associated with flatulency and sour eructations. Digestion, during some portions of the day, will apparently

rienced, followed, as a matter of course, with a corresponding despondency.

These extremes of feeling and symptoms are in some cases fugitive and of short duration, and in others more lasting. Thus, it is quite common for the strength of the patient to improve during the early spring months, when the weather is pleasant and propitious for exercise in the open air, and frequently during the succeeding summer and early fall, if the tuberculous formations are not very extensive nor far progressed, there will be a marked improvement in the general health, and oftentimes a corresponding improvement in the local symptoms.

The condition of the lungs, with which the symptoms just described are associated, is a matter of great importance, as affording the most satisfactory evidence when the extent of the disease is sufficient to produce any considerable obstruction. But when the tubercles are small, not very numerous, and scattered withal over a considerable extent of the lungs, it is often difficult to discover any important change from the ordinary or healthy state. Yet even in such cases, a slight dullness on percussion in the region of the clavicle will generally be noticed, as well as a difference in resonance on comparing the sound emitted on one side with that of the other. It will be seen also that the extent of movement in the chest will be unequal and less than natural. Upon applying the ear or the instrument to the chest, the vesicular sound will be obscure and less distinct than in health, unless an irritation has been excited in the air-cells more immediately in contact with the diseased parts, in which case an increase in the vesicular sound will be heard.

The degree of these abnormal symptoms will depend, of course, upon the extent of the tuberculous deposits and the amount of irritation connected with them. But they are generally not so well defined at this stage of the disease as at a later period in its progress. They are also more peculiar to that stage which is designated by the authorities as the *first stage*, or to that state which is anterior to the actual softening of the tuberculous formations.

lous deposit has undergone that process which is called *softening*,—that is, it has been softened and diluted by a secretion from the surrounding pulmonary tissue; and the change in the character of the expectoration indicates at once the softening of the tuberculous matter, and its passage into the bronchial tubes. While this process is taking place in the earlier tuberculous deposits, the pleura covering the diseased portion of lung generally becomes adherent to the costal pleura, by the effusion of lymph which is subsequently converted into cellular tissue. The extent and firmness of these adhesions are generally proportionate to the extent and duration of the tuberculous disease. The pains which are very commonly experienced in the upper and lateral parts of the chest, are no doubt partly the consequence of the slight pleuritic inflammation which precedes the uniting process; and accordingly I have generally found on inquiry that they were either confined to, or more frequent on, that side of the chest where the most extensive tuberculous disease was manifest.

“While the tuberculous matter is being thus softened and expectorated, leaving cavities of a greater or less extent in the superior lobes, the lower portions of the lungs are gradually becoming tuberculous, the progress of the disease being usually from above downward.

“A careful examination of the chest at this period affords positive evidence of the internal mischief. The upper parts are less freely raised during inspiration than in the healthy state; and this is frequently more evident on one side than the other. The sound on percussion is dull under both clavicles; and, on applying the stethoscope to the chest, a slight but peculiar crackling sound (*crepitant rhonchus*) is heard. The voice is more resonant, amounting generally to bronchophony, and distinct pectoriloquy is often heard in one or more points of the clavicular or scapular regions. All these indications are very generally more evident on one side than the other; and hence, in obscure and complicated cases, arises the advantage and even the necessity of attending particularly to this circumstance, in order to enable us to establish our diagnosis with more certainty and precision.

of one of the scapulæ, there may be heard a clicking or bubbling sound, which is coarser, and gives the idea of being produced in a larger space than any of the common sounds of these parts. This sign is the more conclusive, the finer and more completely vesicular is the natural structure of the lung in the part in which it is best heard. In listening for it the patient should be desired to cough or take a full inspiration, when at first there may be heard only one or two clicks, from the entry of single bubbles; but as the evacuation of the softened matter proceeds, and there is more room for the entrance of air, there is then a more continued bubbling or gurgling sound, and this will be coarse and distinct in proportion to the extent of the vomica and its communication with the air-tubes. The gurgling or *cavernous rhonchus* will also somewhat vary according to the quantity and liquidity of the contents of the cavity, becoming less crackling and more whiffing as these diminish. When it is heard over an extended space, there are probably several cavities communicating with each other, and all containing more or less liquid. It may present other varieties, which are quite intelligible when the mode of its production is known.

“The softening and evacuation of the vomica being complete, or nearly so, there is left an ulcerous cavity or cavern, which becomes the seat of further phenomena. Even before all the liquid is evacuated, we sometimes hear, in the corresponding part of the chest, with the gurgling, a hollow whiffing or blowing sound; and when the patient speaks, a sort of *snuffling* voice interrupted, broken up by the gurgling. When the cavern is empty, these pass into *cavernous respiration* and *pectoriloquy*. Cavernous respiration resembles that heard on listening with the stethoscope to the front of the neck over the windpipe; but it is more circumscribed, and does not give the same impression of a rush of air. It may better be imitated by blowing into shells or thimbles of different sizes. It may present considerable variety, according to the size and shape of the cavity, and the freedom with which the air passes into and out of it from the bronchi. When of very large extent, the sound becomes amphoric, like that pro-

give the pectoriloquy a snuffling character, or by a hollow or fistular resonance, like that produced on speaking at the orifice of the tube of a pan-pipe, the pipe of a large key, a shell, or any such hollow body. This accompaniment is sometimes heard when the pectoriloquy or the transmission of the articulate voice is very imperfect; but we have found it to be more distinctive of a cavity than the loudest vocal sound without it. It may be supposed to depend on the same physical cause as that of the similar sound in the hollow bodies to which we have compared it; the cavity in the lungs being in the same relation to the bronchial voice as they are to the oral voice. When the cavity is large, the resonance is more amphoric or bottle-like; and if the communication with the bronchi be at the same time narrow, the voice may be scarcely transmitted to it, but excites in it only a tinkling echo—a metallic tinkling, as in pneumothorax. All these hollow, fistular, or tinkling characters may be also perceived in the breathing and cough, especially in the latter, but not in a proportionate degree, and sometimes are only perceptible with the voice. These differences must depend on the relations of the cavity to the air-tubes communicating with it: if this open into them so as to catch the current of air passing through them, its interior will be thrown into vibrations; otherwise the air in the cavity may only receive the stronger and more pervading vibrations of the voice. So also, if there be much consolidation about and beyond the cavity, there may be very little passage of air in the tubes, and therefore but little cavernous breathing.”

The more general symptoms of the third stage are thus given by Dr. Clarke: “This has been termed the colliquative stage, from the copious perspirations, the frequent attacks of diarrhea, and the abundant expectoration by which it is usually attended. With these symptoms, but more especially with the diarrhea, the emaciation and debility generally keep pace; the cough also becomes more distressing during the night as the disease advances, and the patient frequently suffers from pains of the chest; while his breathing is much oppressed on the slightest exertion. The feet

absent. In a few instances I have observed violent delirium for several days preceding death.

"Such is the more common progress of tuberculous disease of the lungs, and such are the phenomena by which it is generally accompanied and characterized: we shall presently enter into a more full examination of the different symptoms."

This tuberculous formation may be confined to one lung for a series of years without involving the other, and the patient may enjoy comparatively good health. And indeed, it occasionally happens that, by using appropriate means, the tuberculous matter is softened and thrown off, or, if it exist in small quantities, is disposed of by the action of the absorbents, and the patient finally recovers. But more commonly, when the softening commences at the point of the lung first invaded, other concretions are taking place in the more remote portions, and finally extend to the other lung, which in turn undergoes similar changes until the patient sinks exhausted from protracted irritation and the loss of vital organs.

During the progress of the disease it is no uncommon occurrence for other parts to become involved. Peculiar and characteristic symptoms will then be manifested. The mucous membrane of the bronchial tubes will frequently appear to take on inflammatory action, thus making a troublesome complication, which may be recognized by the severity and distinct paroxysmal character of the cough, and by its attendant rough, grating sounds. The investing serous membrane of the pulmonary organs will likewise often present well-marked evidences that this part is suffering from sanguineous engorgement; in which case, severe lancinating pains in one or both sides will be experienced, accompanied by more than a usual degree of febrile action and difficulty of breathing. These symptoms are most likely to arise in the latter stage of the disease, when little benefit can be expected from treatment beyond a mere palliation.

The larynx, if not complicated with the disease in its earliest manifestation, rarely fails sooner or later to exhibit signs of serious difficulty, and often presents one of the most troublesome and distressing symptoms the patient has to bear

vidual case,—that, in fact, our symptomatology of the disease must necessarily be general, and therefore, in more or less particulars, inapplicable to cases which may be observed in actual practice. In some cases the first *particular* symptom that will attract attention may be a profuse hemorrhage from the lungs which, though giving relief to a previously existing sensation of fullness and a hacking cough, is, in general, the commencement of more grave and rapid symptoms that rarely fail to supervene. In other cases, aside from feelings of general debility—distinct, however, from the cachectic condition heretofore described—and perhaps a slight cough dating, so far as can be recollected, from a cold taken at the period of the monthly terms, which is believed to arrest this important evacuation, there will be nothing of consequence to suggest the fear of consumption. And in such cases both patients and their friends are apt to suppose that the removal of that difficulty would restore the usual health, not once suspecting that this is an associated and secondary difficulty, following upon a prior morbid condition of the whole system. Yet in such cases, it is proper here to state, the symptoms may oftentimes be arrested by appropriate treatment, and the attendant general derangement corrected. And occasionally, even when a severe cough, hectic fever, night sweats and emaciation have been associated with the catamenial obstruction, all these symptoms have subsided and the system recovered its usual health and strength. But more generally the symptoms gradually increase until the constitution is entirely undermined beyond the hope of restoration.

In other cases, again, the foundation is supposed to be laid by taking a “severe cold,” while in the enjoyment of what is considered good health. This is followed by a hoarseness and “soreness of throat,” upon which an irritating and troublesome cough supervenes, and at length all the symptoms of confirmed phthisis are fully developed. These, with many other modes of approach equally insidious and deceptive, and equally certain in their tendency with those which are more decided and not so well calculated to flatter and mislead, will be observed among the Protean phases which this disease assumes.

LECTURE XLIX.

PHTHISIS—CONTINUED.

Physical symptoms — Tuberculous matter — Quotation from Dr. Clarke — Morbid anatomy — Quotation from the same — Causes — Diagnosis — Prognosis — Treatment — Change of Climate — Exercise.

Physical Symptoms. We come now to consider the physical symptoms of consumption. Those developed during the later stages of the disease, you will have observed from the quotations I have given, are well defined and unequivocal. At an earlier period the sounds recognized by auscultation will be the mucous, sub-crepitant, and sonorous râles. Percussion will be dull, and the vibrations of the chest will be readily recognized by applying the hand to that part. The upper portion of the chest will be flattened and contracted, and either an unnatural resonance will be heard on percussion—indicating the existence of cavities from the discharge of large tuberculous formations—or, more generally, a dullness of sound will be heard, owing to the consolidation from adhesive inflammation following the discharge of the tuberculous deposits; at the same time there will be an increase in the vibrations of the chest upon speaking or coughing. When cavities exist the sounds peculiar to them will be emitted upon auscultation. The gurgling sound resulting from an accumulation of matter partially filling the cavity will be distinctly heard. This is styled the cavernous respiration, and is accompanied with the vocal resonance—a peculiar sound, also called pectoriloquy. When the cavity is large the respiration becomes amphoric, and the sound called metallic tinkling will be present. These examinations should

peculiar physical characters.' In this state it is met with in the cells of the spleen.

"The *consistence* of tuberculous matter varies from that of a fluid to the firmness of cheese; the degree of consistence depending chiefly on the resistance offered to its accumulation and the absorption of its more fluid parts.

"The *form* of tuberculous matter Dr. Carswell considers as entirely dependent on the structure of the organ in which it is deposited. Its granular appearance in the lungs is owing to its accumulation in a small number of contiguous air-cells; and the lobular arrangement, which it sometimes presents in the same organ, is produced by its being deposited in the air-cells of a number of lobules, the intervening pulmonary tissue being unaffected. When the tuberculous matter is disseminated throughout a considerable extent of lung, it has no definite form.

"Whatever may be the site, consistence, or form of tuberculous matter, it is to be regarded as a morbid inorganizable product, and consequently insusceptible of any change that is not affected by the living tissue in which it is deposited.

"Animal chemistry has not done much to illustrate the nature of tuberculous deposits, and a rich field of inquiry on this subject is still open to the experimental chemist. It would be very desirable to have the blood and other fluids of tuberculous subjects analyzed, as well as tuberculous deposits in man at different ages, and also in the lower animals.

"The chemical composition of tuberculous matter varies according to the different periods at which it is examined, also in different animals, and probably in different organs. In man it is chiefly composed of albumen with varying proportions of gelatin and fibrin." *

Morbid Anatomy. Dr. Clark's chapter on the "Morbid

* "Colored representations of the varieties of form assumed by tuberculous matter in different organs, are given in the first fasciculus of the *Illustrations of the Elementary Forms of Disease*, now publishing by Dr. Carswell; a work which, whether we regard its beauty and fidelity of execution, or its importance and utility in a pathological point of view, far surpasses anything of the kind that has been produced in this or any other country."

"Gray granulations were first observed and described by Baillie, who thought they were a morbid product, *sui generis*. He described them as constituting a species of consumption, sometimes entirely simple, but most commonly complicated with the tuberculous. He supposed that in time they produce ulceration, and that the caverns to which they give rise are distinguished from those which follow tubercles by being lined with false membrane. Laennec, on the other hand, maintained that they are necessarily the first form under which tubercle presents itself; and Louis and some other pathologists have adopted Laennec's views. But Dr. Carswell shows that the gray semi-transparent substance does not necessarily precede the formation of opaque tuberculous matter; that the latter is found in several organs in which granulations are never observed; and that the granular form chiefly depends on the structure of the air-cells in which it is deposited.

"*Crude tubercle*. This term is applied to certain tumors of a rounded form, varying in size from that of a pin's head to that of a small walnut. They have a yellowish white color and a soft cheesy consistence. They are, as has been stated, generally the result of changes which have taken place in the matter deposited under the form of gray granulations: but these two forms almost always co-exist, Louis having met with only two cases of crude tubercle without granulations, and five of granulations without tubercles.

"*Tuberculous infiltration*. The third form in which tuberculous matter presents itself in the lungs is that of infiltration into the cellular tissue of the organ. Baillie, who first noticed this state, gives the following accurate account of it:— 'In cutting into the lungs, a considerable portion of their structure sometimes appears to be changed into a whitish soft matter, somewhat intermediate between a solid and a fluid, like a scrofulous gland just beginning to suppurate. This appearance is, I believe, produced by scrofulous matter being deposited in the cellular substance of a certain portion of the lungs, and advancing toward suppuration. It seems to be the same matter with that of tubercle, but only diffused uni-

eight in the left and ten only in the right lung; and in eight of perforation of the pleura, he found seven on the left and one only on the right side. When to these observations we add the result of Reynaud's experience, who, of forty cases of pneumothorax, found twenty-seven on the left side, and thirteen only on the right, I consider that there is sufficient evidence to confirm the conclusion that the left lung is most frequently affected. This is the reverse of the relative frequency of pneumonia, on the two sides, at all ages. M. Lombard found that, of eight hundred and sixty-eight cases of pneumonia, four hundred and thirteen were affected on the right side only, two hundred and sixty on the left, and one hundred and ninety-five on both sides. By the above comparison it appears that pneumonia on the right side is to that on the left, in point of frequency, as three to two.

"Softening of tubercle. By those who, with Laennec, regard tubercle as organizable, the process of softening has been considered a consequence of the death of this substance; and by others, who do not take this view of the subject, it has been stated to begin always at the center, and to proceed toward the circumference. But Dr. Carswell has shown that the softer appearance of the center of the tubercle, has no connection with the process of softening. It depends on the tuberculous matter being deposited upon the internal surface only of the air vesicles or bronchi, the central portion being occupied by mucus or other secreted fluids. When the air-cells or minute bronchi, thus partially filled with tuberculous matter, are divided, they represent tubercles with softening in the central point; when, on the other hand, they are completely filled, no such appearance is presented. 'Softening,' Dr. Carswell further observes, 'begins most frequently at the circumference of firm, tuberculous matter, or where its presence, as a foreign body, is most felt by the surrounding tissues. In the lungs and cellular structure of other parts, it is often seen making its appearance in several points of an agglomerated mass of tubercle, which has included within it portions of the tissue in which it was deposited; whereas, in the brain, the substance of which has, from the commence-

"Sanguineous congestion occurs to a greater or less extent in every case. Dr. Carswell remarks that when the tuberculous matter is situated at the root of the lungs, the large pulmonary veins may be compressed so as to prevent a free return of blood to the heart, and thus produce general pulmonary congestion. In other parts of the lungs, the congestion which arises from the presence of tubercles is only partial. In either case, hemoptysis may be the consequence; but it is equally certain that, when considerable, it is very commonly attended with general and active congestion of the lungs, and often occurs before the accumulation of tuberculous matter is sufficiently extensive to produce much obstruction to the circulation through the larger vessels.

"When, instead of producing merely impeded circulation and consequent congestion of the lungs, tubercles give rise to irritation and inflammation, we have the usual appearances of inflammation in its various grades.

"The views of Dr. Carswell, regarding the seat of tubercle, enable us to explain, in a very satisfactory manner, the mode in which the different tissues are successively affected. The tuberculous matter being, as he describes, deposited in the air vesicles and minute bronchial tubes, these parts are necessarily first irritated by it; and being constantly distended by the matter accumulating within them, they are gradually enlarged in size, and sooner or later are destroyed by ulcerative absorption. Hence it is that the bronchi are always found enlarged, stopping abruptly, and appearing as it were cut across, at their entrance into a cavern. Unlike the other parts of the lungs, they are never found enveloped and compressed by tubercles, except in those instances of rapid infiltration in which the whole substance of the lung appears to be simultaneously injected.

"The cellular tissue, healthy air vesicles and blood vessels are at first only pushed aside, and compressed by the tuberculous deposits, but they are ultimately condensed and rendered impervious to air by the infiltration of tuberculous matter and the common products of inflammation.

"The mode in which the blood vessels are affected by the

of various consistence and color; sometimes having a resemblance to thick curds; at others a pus, or simple serum, or a mixture of these, and in some instances blood. Cavities are occasionally found quite empty and lined throughout with a dense membrane. This is intimately united with the mucous membrane of the bronchi at the point where the latter enter, and, according to Louis, frequently consists of two layers,—the first, or internal, being dense, gray, or almost semi-transparent and semi-cartilaginous, about the third or fourth of a line in thickness; the second very soft, yellow or white, of about the same thickness, but often not continued over the whole surface, as the first is. Their density and even their existence often seem to bear a relation to the age of the cavity. Both these layers were wanting in a fourth of the cases examined by Louis, leaving the pulmonary tissue quite bare.

“As the neighboring caverns increase in size, the intervening parenchyma is gradually destroyed, until they coalesce, and an entire lobe may be thus converted into one large, jagged, irregular cavity, in which portions of pulmonary tissue are often found, either hanging loosely or traversing it in various directions in the shape of bands, and occasionally perfectly detached. These loosened portions, the bands, and the walls of the caverns, present little or no trace of the healthy pulmonary structure. They are of a reddish or gray color, and are exceedingly hard, being for the most part composed of semi-transparent granulations, or crude tubercle and black pulmonary matter. Portions of the walls are also occasionally found in a state of mortification.

“The extent to which the lungs are affected by the progress of tuberculous disease varies greatly. In some cases a few caverns only are found at the summit of the lungs; in others the portion of healthy parenchyma which remains is so exceedingly small as to excite surprise that the function of respiration could have been carried on so as to support life. Stark calculated that the extent of lung which remains fit for the admission of air may be estimated, at a medium, to be about one fourth of the whole substance.”

an individual member of a scrofulous or consumptive family, in whom the predisposition is not so distinctly marked as in other members, or who by some means avoids the developing influence and thereby escapes.

Whatever may be the original causes or remote occasions of the disease, there can be no doubt that the most important ~~immediate~~ influence, operating for the formation of tuberculous concretions, proceeds from the condition of the blood. ~~In fact,~~ at whatever stage in the progress of the predisposing conditions this state of the blood may be shown to exist, or ~~really~~ begins to exist, it is impossible to suppose the actual formation of tubercles in any part of the system without the previous existence in the blood of the elements necessary to their growth, since the formation, growth, reproduction and repair of every portion of the solid tissues of the body must necessarily emanate from that source. It is, therefore, to this fluid alone that we must look as the *immediate* source of tuberculous depositions, and upon its influence in the repair and waste of the solids of the body must be our main reliance, and to it must we direct our therapeutic measures, for the removal of the disease.

Among the most prominent and common *exciting* causes may be mentioned that of cold. I do not now allude to the influence of "colds" in producing mere accidental determinations—though this, no doubt, in a certain stage of its progress, may have much to do in developing manifest symptoms of the disease; but I refer to that depressing effect upon the vital energies which is well known to result from the long continued influence of cold. This effect is well known to be produced in northern latitudes, where a low range of thermometric heat continues for a number of consecutive months. In illustration of this may be mentioned those numerous cases within the observation of most physicians, in which patients have escaped the fate of the rest of their family by removing their residence to a more southern and warmer climate. Many instances of this kind are known where, by a residence at the south for a series of years, under favorable circumstances for the change, the constitu-

consumption. But it is questionable whether they do not thereby make distinctions without real differences, as almost every influence attributed to these circumstances can be as well, if not more properly, ascribed to the causes previously mentioned, unless, indeed, that of age be excepted, which has already been sufficiently considered. To speak of an occupation, which necessarily involves the inhalation of acrid or irritating substances, or exposure to any other predisposing influence, as a distinct cause, is clearly a distinction without a difference.

Diagnosis. The *physiognomy* of the disease, if I may be allowed the expression, heretofore described, and the usual attendant symptoms, combine to make the diagnosis of consumption not generally difficult or obscure. The greatest difficulty will be to distinguish cases of chronic bronchitis from this disease, and it will require on the part of the physician a rigid scrutiny of the symptoms most peculiar to each in order to form a correct opinion. But when you consider the peculiar bronchial cough, the more copious and somewhat characteristic expectoration, the physical symptoms peculiar to each, and the general absence in bronchitis of the symptoms so strikingly characteristic of the early stage of true pulmonary phthisis, but little difficulty will be experienced in coming to a correct conclusion. If, however, the bronchial disease has developed the latent tuberculous affection, or has become associated with it, the physical symptoms, so clear and well defined in either case, will afford very little reliable evidence; and fortunately it is of little consequence, in such cases, to determine which was the primary disease.

I have seen a few cases in which irritation reflected upon the pulmonary organs seemed to threaten the patient with rapid consumption. Hectic fever, night sweats, a rapid pulse, and a most harassing cough were developed, and the cough was attended with a suspicious expectoration resulting from extensive disease in the roots of the spinal nerves—shown to be such from the extreme sensibility upon pressure over those parts. And yet under appropriate treatment for that local difficulty all those symptoms rapidly de-

suggested and required by the theory that derangement of the blood is the primary disorder, which, under the old doctrine of mere local inflammatory action, would have been almost certain to prove fatal. And, in fact, such is my confidence in the measures which I am about to recommend, and with which I have had no little experience, that I do not hesitate to encourage most patients, who consult me at any stage of the disease anterior to the actual softening of the tubercles with the hope of ultimate recovery.. In such cases my opinion, would, of course, be more or less modified by the extent of the vitiation of the system, the strength of the hereditary predisposition, and also by the patient's ability to profit by all the influences connected with diet, exercise, bathing and climate.

I need not say to you, since the books are filled with statements, which the medical journals are constantly reiterating, that post mortem examinations of persons who have fallen victims to other diseases, have disclosed numerous instances in which eschars, cicatrices and adhesions presented indubitable evidence that tuberculous deposits had previously existed, and by a change in the diathesis further deposits were prevented, and this disease removed. My own experience accords with the remark of Dr. Wood, that "it occasionally happens that consumptive symptoms disappear entirely, even in the second stage of the disease, after the formation of a cavity. This event, it is true, is comparatively rare; but some such cases have probably fallen within the notice of almost every practitioner of extensive experience. Even should the disease ultimately return, still, the case may be said to have been cured; as the occurrence of a second attack of pneumonia is certainly no proof that the first was not cured. But there have been cases in which no return of the symptoms has taken place during the residue of life, even though considerably protracted. Two instances of this kind have occurred in medical men of this city. One of the patients was affected, when a young man, with all the symptoms of phthisis, including frequent attacks of hemoptysis, severe cough, hectic fever, etc., from which he completely

first importance, and highly useful, if not necessary, in preparing the way for the efficient action of the remedies more particularly adapted to fulfill the first indications.

From the well known laxity of fiber, and its usual concomitant of imperfect elimination of stale and effete materials from the system, with an insufficient elaboration of substances necessary to its healthy repair and reproduction, it becomes of the highest importance that a due amount of exercise in the open air should be taken. The kind and amount of exercise should always be directed by the physician. This is all the more necessary on account of the perverse disposition of most patients, and especially those in easy circumstances, to consider it a very troublesome matter, and therefore to limit themselves to one or two short walks a day, or to some other effort equally insufficient and unsatisfactory in its effects. It often requires no inconsiderable reflection and ingenuity to devise means for accomplishing this object without resorting to measures which, on the one hand, would be considered menial and improper by persons in comfortable positions, and, on the other, would not be beyond the reach of patients whose every moment of time is necessary to eke out a meager living. Yet, so necessary is exercise to properly change the consumptive diathesis, that it often becomes a matter of life or death. In this view of the subject, an entire change of business or occupation will be many times an indispensable condition of recovery, and in any event, it may be said in general terms that exercise to the extent of considerable fatigue, but not of actual exhaustion, should always be taken, and as much as possible in the open air. It should not be confined to small portions of the day, but should be continued as long as it can be borne, and followed by proper intervals of rest—thus alternating exercise and rest most of the time not occupied in sleeping and other indispensable duties. And this course should be faithfully kept up for a series of months and years, if necessary, or until the system is renovated, or the infirmities of age render its continuance impracticable. It will thus often be found that the strength will improve, the ability to endure

more or less attendant upon ordinary exercises, such as riding or walking, where they are resorted to exclusively for health, and which, therefore, soon become irksome and fail to produce any decided benefit. In addition to this, the circumstances of the person who can or does only resort to these modes are apt to be such as to furnish himself with abundant time for brooding over his health and condition—an occurrence always to be guarded against if possible. I should not, therefore, hesitate for a moment to recommend any man, in whom the marks of hereditary consumption were visible, whether in the bloom of youth, in the maturity of middle age, or even in the decline of life, and whether with flattering prospects of achieving professional eminence, fame, or wealth, to abandon such bright and enticing hopes at once, and betake himself to the humble but not the less honorable pursuit of farming.

Next to this, where the circumstances will permit, riding on horseback, or in a moderately rough carriage, is tolerably well adapted to answer the purpose. Connected with this, however, is the inconvenience of bad roads and rainy or uncomfortable weather, frequently occurring or continuing for successive days and weeks. The patient, therefore, should not be limited to such out-door occupations. Wood sawing, of the gymnasium, when accessible, may be substituted in unpropitious weather. Either of these modes affords opportunities for general muscular exertions useful for the time being; but such in-door employments have the objection of being deprived of a competent and free supply of fresh air, and are to be considered rather as expedients when the state of the weather precludes more desirable exercise. Playing ball or cricket is an active and agreeable amusement, and when properly indulged may be highly beneficial.

As before remarked, it is often very difficult to contrive expedients for agreeable or healthy exercise within the reach of those whose pecuniary circumstances are limited, or who are necessitated to close and constant manual labor to obtain the means of subsistence. But, remembering that "where there is a will, there is a way," even such persons, when

also care should be taken to have the outer garments closely buttoned when changing from a warm to a colder temperature, and to remove them while in warm rooms, to guard against the debilitating and relaxing influence of too great warmth, and also to prevent the susceptibility to cold which would thus be induced. The objection to active out-door exercise in damp or wet weather may be in a great measure removed by wearing a light loose gum coat, and double soled boots, with a loose cork sole made to fit in on the inside. The latter has the advantage also of keeping the feet warm in cold dry weather. I have found from personal experience that boots thus made, the "uppers" also being doubled more than usual, are far preferable to any over-shoes I have ever seen.

But no care or protection can always afford the required immunity from the debilitating influence necessarily produced upon the system, in many cases, by the protracted northern winters. The extreme cold of such winters interferes with the amount of exercise indispensable to healthy assimilation, and in every way necessary. Time, in many cases of consumption, is a matter of the utmost importance, especially where, during the summer, the system rallies its forces and seems to be making great progress in the change of diathesis, which the cold of winter will be sure to arrest. A trip to the south in such cases should be recommended. In fact, few cases have much chance of final recovery, when the hereditary tendency is clearly marked, without a change of residence, at least, during the winter. It is all-important, however, that this change should be made before the disease has progressed so far as to render recovery almost impossible—an event which unfortunately too often happens before the migration is actually undertaken. I have known numerous instances in which, not only was the disease completely arrested, though previously progressing with rapid strides, upon removing from a northern to a southern climate and pursuing an appropriate course of medication, but also by long perseverance, the diathesis was corrected, and good health regained.

it therefore becomes of the highest importance to avoid those unpleasant associations and painful discomforts which have a powerful effect in depressing the mind and feelings. This is equally important, whatever the situation of the patient, when withered hopes or disappointed affections, often too willingly cherished or gloomily brooded over, are fast wearing upon the increasingly sensitive organization, and daily undermining its power to cope in unequal struggles with the ravages of the disease. In such cases, the substitution of different or more cheerful occupations and more agreeable associations will be the very first measure toward a restoration. The particulars of every case will of course be specially and fully considered by the physician and friends, and the course of measures adopted will be governed by the requirements of the patient, and by his ability to command extraordinary aids and advantages.

Before leaving the subject of exercise, it will be proper to allude to a difficulty often met with and presenting a serious impediment to healthy action in the pulmonary organs. I refer to those narrow-chested and stopp-shouldered cases so often found in cachectic or scrofulous individuals, and especially in young persons not well matured. The inevitable consequences of the continuance of this peculiarity are imperfect respiration and a weakened state of the circulation in the lungs. To obviate this difficulty, in a measure, at least, a shoulder-brace should be constantly worn, and so adapted to the points of the shoulders as, with the lacing which is a part of the apparatus, to straighten the spine and draw the shoulders back, without any embarrassment to the motion of the ribs, and, consequently without impeding free pulmonary action. By this means more space will readily be obtained in the cavity of the chest, which will soon be occupied by the gradual expansion of the lungs consequent upon taking proper exercise. Thus also the ability for a greater amount of exercise will be increased, and this in turn will produce an increased demand for nourishing food.

in short all plain and simple articles which are found best to agree with the stomach may be allowed, avoiding rich pastries, hot bread, greasy animal food, and those succulent vegetables which easily ferment.

It can scarcely be expected that I should do more in this connection than to indicate general principles. The details for every case that may arise would be tediously voluminous. The attending physician must select and prescribe a regimen adapted to the peculiarities of each case, according to the best of his judgment and discretion. I will therefore only add that changes of diet, and even a suspension of stimulating articles for a day or two, as in cases of slight indisposition in ordinary health, will often be necessary in order to relieve the system of any temporary indigestion, or unusual irritation, that may occur.

Not only, as a general rule, should the diet be nutritious and substantial, but in many cases the moderate use of mild stimulants will be found highly beneficial in promoting digestion and favoring assimilation. For such purposes the purest and best ales, such as the Scotch ale and London brown stout, or the lighter wines, such as claret and hock, may be used with decided advantage, in small quantities, either with or immediately after dinner. Although I believe that in health everything of the kind is unnecessary and injurious, yet in disease those means which are improper in health often become our main reliance. The use of stimulants and a full diet will of course be much influenced by the amount of exercise which the patient is willing or able to take, and should in a great measure be governed by it.

Another measure of no little merit on account of its curative influence is *bathing*, which, perhaps, may be more appropriately considered in this connection than elsewhere, though the condition of the skin has an important relation to the remedies hereafter to be prescribed. The depurating functions of the skin have not, as a general thing, been sufficiently appreciated either as regards their preventive or curative influence on disease, and I cannot but think that the success attendant upon the appliances used in hydropathic establish-

other portions in a similar way, the whole surface may be thoroughly bathed with decided advantage. If however this cannot be borne, warm broke or weak ley-water and whisky may be used every night before going to bed, followed with the crash towel and friction. This indeed may be desirable in those cases having evening febrile exacerbations, even though one or the other bath is taken every morning.

In the selection of *medicines* for the treatment of consumption, two leading indications are presented in all those cases characterized by the tuberculous condition heretofore described, to-wit: *general alteratives*, or remedies which stimulate all the great outlets of morbid elements, and *permanent tonics*. Fortunately there is no incompatibility in the effects on the system of these two classes of remedies, or such of them as experience justifies us in using in this disease; on the contrary they act in perfect harmony on the tissues, and in some cases indeed those of one class, or those possessing the peculiar properties of the class in a prominent degree, fulfill indications of both descriptions.

In the selection of remedies, the fact should be borne in mind that the blood in this disease is deficient in fibrin and red globules, as well as in many of its mineral constituents, particularly the ferruginous and alkaline, and hence those articles should be prescribed which combine the properties necessary to supply this deficiency. Few if any articles known in the materia medica produce in a more eminent degree alterative and deobstruent effects on the animal economy, and are better adapted to fulfill the indications, in this respect, presented in tuberculous affections, than the sanguinaria and taraxacum. The latter, especially in the form of the hydro alcoholic extract, possesses also sensible alkaline properties, upon which its value, in this disease, in part depends. It is well known to act upon the liver, promoting healthy bilious secretion; while at the same time its tonic properties aid digestion, and thereby favor any other tonics that may be prescribed. Its action on the renal excretories is not less marked and apparent than on the secretory organs, increasing in a most sensible degree the amount of the urinary

R. Hydro al. ext. taraxacum, 3vj.
 Sanguinaria, grs. xvij.
 Podophyllin, grs. x.
 Leptandrin, grs. xx.
 Pulv. liquor. root, q. s.

Divide into thirty-six pills, and give from one to two twice a day, or sufficient to keep up a moderate aperient and cholagogue action. Or as a substitute, when it may not be convenient to procure the concentrated articles referred to, a syrup may be prepared and administered according to the following prescription :

R. Taraxacum rad. 3ij.
 Sanguinaria rad. 3ss.
 Euonymus cort.
 Staphylea cort. aa 3j pulv.

Make into a quart of syrup by boiling, adding two pounds of loaf sugar, and a gill of brandy to prevent fermentation. Of this a common stemglassful may be taken three times a day. The euonymus or "Indian arrow," the bark of the root of which is used, possesses very valuable medicinal properties, with a considerable range of application. The most prominent are its aperient, tonic, and hydragogue properties, while the staphylea is unsurpassed as a pure *unirritating* tonic. As a variety, and constituting a valuable tonic expectorant and alterative, the pulmonary syrup recommended by Dr. Beach will be found often to fill an important vacuum.

Meantime the infusion of the *prunus virginiana*, or wild cherry bark, should be freely administered in half gill doses three times a day. The specific action of this article may not perhaps be so well understood as that of many other remedies, but while we may be under the necessity of administering it somewhat empirically, yet experience has abundantly shown that it possesses medicinal properties useful in this disease. Dr. Wood says : "The remedy most applicable to the circumstances of phthisis is perhaps *wild cherry bark*, the *prunus virginiana* of the United States Pharmacopœia. This has the great advantage of uniting a tonic influence over the digestive and nutritive functions, with a

vegetables, and condiments; with it he whitened the surface of bacon, beets, pickles, and other things to which it is not usually applied. When in his fields he carried dried beef in his pocket, and chipped it off to chew like tobacco between meals.

"The habit was reprobated; his friends admonished him that it would 'dry up his blood;' but he ate on, said he liked it and it agreed with him. This was the only circumstance at all remarkable either in his habits or dieting; and he perfectly recovered. He remained through life remarkably lean, but in the enjoyment of more than ordinarily good health, and without a symptom of p^hthⁱsis. He died suddenly, in 1840, aged fifty-eight; the disease unknown.

"Muriate of soda, as a medicine, is a perfect Proteus. We have seen from analysis, that it constitutes about nine parts per one thousand of the blood, or nearly five per cent of its solids; a proportion exceeding that of all its other mineral constituents, collectively. A due portion of it, therefore, would seem indispensable as an article of diet. When taken as a medicine the variety of its effects is remarkable. In small doses it acts as a stimulant, tonic, anthelmintic, and anti-irritant; in large doses, as a purgative and an emetic; it is also an astringent and a styptic; and when excessively used it becomes a most powerful sorbefacient. It is, in fact, an astringent in diarrhea, a purgative in constipation, a tonic, an emetic, a stimulant, an anti-irritant, a styptic in hemoptysis, and the cause of fatal hemorrhage in scurvy.

"The sorbefacient efficacy of salt we see exemplified in its action, when applied locally in form of poultice, or brine, in the removal of wens and other adventitious matters from the tissues of the body. Its efficacy in the removal or destruction of bots, grubs, and other albuminous intestinal entozoa, incident to horses, is of general notoriety; and its efficacy as a vermifuge for children, and their avidity for it when thus afflicted, have also been remarked; but less than it merits to have been.

"Liebig has observed: 'That the fattening of an animal is rendered impossible when we add to its food an excess of

“In consumption the degeneration essentially consists in *deficient globulous and mineral*, and in *excessive* abnormal proportion of *fibrinous* and *albuminous* constituents.

“In this condition nature’s restorative effort at equilibrium is manifested in the tuberculous effusion of albumen, and in imparting increased fibrinous character to the crassamentum, to arrest hemorrhage from the tuberculous ulcerations.

“The lesion of the blood in scurvy is caused by living too exclusively on salty, nutritious, or stimulating diet; and is cured by resort to succulent vegetables, acid fruits, etc.

“On the other hand, the lesion of the blood incident to consumption, is that which is found to arise from the use of insufficient, innutritious, and succulent diet; or from weak digestion. Why should not a change of regimen alter this condition as well as the other?

“To the cure of consumption a prerequisite is, removal of the tubercular depositions. This can be effected by absorption and excretion, or by ulceration and expectoration: the former, on all accounts, to be preferred.

“*Now we find exposure to the contingencies productive of scurvy, both causing excessive absorption, and actually curing consumption.*

“No observation in relation to the disease has been more common or better established, than that long sea voyages cure consumption, especially if productive of scurvy in the crew. An example of the kind is offered in the following extract from the Med. Chir. Rev., for June, 1824:

““In the year 1722, His Majesty’s ship Leander sailed from Trincomalee for the Cape of Good Hope, taking on board the mechanics of the dock-yard establishment, then reduced on the island. There were also embarked twenty-six invalids, and all the sick that could be removed from the hospital. These invalids and sick were principally affected with chronic hepatitis, dysentery and phthisis pulmonalis, all of which (even some who were expectorating large quantities of purulent matter) recovered on the passage to the cape.

““This good fortune was counterbalanced by scurvy, which broke out among the crew, and in spite of large quantities of

the exercise of sailing. That those things are advantageous is unquestionable; inasmuch as they are calculated to invigorate the system, which we see by the increased color in the complexion of those who exercise in the pure air, an effect produced by the increase of the red globules of the blood.

“But it happens, singularly enough, that several authors of the highest rank in the science, whose works are textbooks in the profession, are found within the same volume, ascribing, in one chapter, the cure of consumption in such cases to the *pure sea air* and the salubrious *exercise* of sailing, and in another ascribing the accession of scurvy to *bad provision, bad air, and want of exercise*.*

“Predicated on such hypotheses, patients have been put upon the fruitless expedients of short voyages, as in Europe for example, from Calais to Dover, or from Liverpool to Florence—to and fro; which, if prosecuted to an amount in time and distance equal to that of a long voyage, it was supposed, would be productive of like curative results. The futility and utter failure of all such expedients, should long since have set such speculations at rest.

“The facts in the case when they come to be properly appreciated, will offer much more comfortable, more easily attainable, and, withal, better adapted conclusions. For, I conceive, on investigation by those who can procure better materials for such research than I have access to, it will be found that the scorbutic diathesis is as incongruous to, and as curative of phthisis on land as at sea; and that the same manner of living will as readily produce the same result in the one situation as in the other.

* “A large proportion of our authorities contain accounts of cures from sea voyages, perverted in the statement somewhat in this manner. The following is from Dr. Rush, (speaking of cures): ‘One of these says he was the son of a farmer in New Jersey, who was sent to sea as a last resource for a consumption. Soon after he left the American shore, he was taken up by a British cruiser, and compelled to share in all the duties and hardships of a common sailor. After serving in this capacity for twenty-two months, he made his escape and landed at Boston; from whence he travelled on foot to his father’s house, (nearly four hundred miles,) where he arrived in perfect health.’ This cure he ascribes to the walk from Boston.”

“ We have the assurance of credible medical record that scurvy ‘ was endemic two centuries ago in all the north of Europe,’ and that it became gradually less frequent as agriculture and horticulture improved.

“ Huxam speaks of it in England in his time. He remarks that it was common with fishermen and tradesmen, and seldom met with in agricultural laborers, who drink cider and eat vegetables and fruits. All the writers of those times point to the latter part of winter, and early part of spring, as the seasons in which scurvy prevailed most—the periods for the use of salt meats and of scarcity of vegetables.

“ English history of the same period informs us that agriculture was but little attended to, being superseded by attention to grazing. Cattle and sheep were fattened on grass in summer, and in autumn the inhabitants killed and salted away their year’s supply of meat, which would seem to have been subsequently eaten without vegetables, or nearly so; for, ‘ It was not,’ says Hume, ‘ till the end of the reign (of Henry VIII) that any salads, or other edible roots, were produced in England. The little of these vegetables that was used, was formerly imported from Holland and Flanders. Queen Catherine, when she wanted a salad, was obliged to despatch a messenger there on purpose.’

“ In this state of affairs the fare throughout the country must have been pretty much on a par with sea-store diet. While such were the habits of the English people, *scurvy was their scourge*. But up to a much later period, we have the high authority of Sir Gilbert Blane, that it prevailed most fatally, especially among the maritime portion of the population; among whom he estimated it to have been productive of greater mortality than all other diseases, including maritime accidents and the horrors of warfare.

“ During the whole of the scorbutic reign, *phthisis* seems not even to have been a notable disease. Yet among the same race of people who have only so far changed their habits of living as to have come to esteem succulent vegetables essential to subsistence, and to prefer meats in their fresh and succulent, to their cured condition, the character of *scurvy*

has become but matter of history, while consumption has become the *scourge of the nation*—the cause of one fourth of all the deaths that occur among the whole population.”

There are few remedies to which the attention of the profession has been directed that have been more variously estimated as a deobstruent in tuberculous disease than iodine, or some of its preparations. Its use in the first place was suggested, no doubt, by its well known influence in the cure of goitre and some other glandular engorgements. But the difference between the induration produced by the adhesive inflammation consequent upon disease in such cases, and the unorganized deposits constituting tuberculous disease, at once destroys the analogy, and suggests the reflection that, though it was a reliable and certain remedy in the one case, it might be of no avail in the other. Accordingly it has failed to answer the expectations of its early advocates in its influence upon tubercles. Yet its undoubted influence in some cases of consumption justifies the conclusion that whatever virtue it possesses is manifested in its peculiar effect on local induration. The extensive adhesions and indurations, shown by morbid anatomy to exist in most cases of consumption, give ample occasion for the application of iodine. I have too often witnessed its beneficial effects when administered in disease of the lungs to leave any doubt in my mind in relation to it. I prefer the iodide of potassa to any other preparation, as it combines decidedly diuretic properties, and thus adds to its other effects an influence never to be overlooked in consumption. From five to eight grains of this salt may be given twice a day in water, or it may be added to the syrup before prescribed. In some modifications of the disease it can also be inhaled with advantage. This can readily be done by any simple apparatus made for the purpose, or as recommended by Dr. McDowel, whose method is “to put a few drachms of iodine into a small vial, and suspend it about the neck like an amulet. Cork and uncork the vial as more or less of the vapor is desired.”

Analogous to this, and exceedingly useful in the bronchial and laryngeal complications of consumption, is the inhalation

to an emetic in almost any case of complication where its use is indicated. The influence of derangement of the stomach on the lungs and other viscera, furnishes an additional motive for the administration of emetics in this disease besides that for which it is generally prescribed. Emetics, therefore, occasionally administered where the state of the stomach requires them, though not positively curative, are yet so important in favoring the proper action of radical measures, and in relieving symptoms always troublesome, that they may with great propriety be placed among the most important means necessary to a cure.

The appearance of the tongue, the color of the skin, and the sensation in the region of the stomach, will be our main guides as to the necessity for their use. If the tongue is thickly coated, if there is a sensation of fullness with slight nausea in the stomach, and if the complexion of the skin is dark and sallow, we can scarcely go amiss in administering an emetic. But on the contrary, if the tongue presents a high-colored or red appearance, with but little or no fever, and some epigastric tenderness, emetics would be likely to do more harm than good, and in such cases should be withheld. When emetics are indicated, at different times during the progress of the case, by the symptoms described, they may be repeated more or less frequently. The choice of emetics as a general thing is a matter of no small moment, and particularly so in this disease. Those articles should be selected that are known to be mild in their operation, and such as do not irritate or prostrate the system. An infusion of boneset and lobelia, in two tablespoonful doses, repeated every ten minutes, prepared by steeping half an ounce each in a pint of water, or the acetous tincture of sanguinaria and lobelia in tablespoonful doses, taken in warm water and repeated as above, are among the most prompt, mild, and efficient emetics I have ever used. The cough will be relieved, expectoration increased, respiration become more free, and the appetite improved, after the operation of the emetics. Offensive and unpleasant as these remedies are, I have in many cases been requested by patients to repeat them, when the symptoms

returned, for the sake of the sensible relief which they afford. But when the violence of the cough is kept up and aggravated by an irritation of the stomach, a very different course will have to be pursued. In cases presenting the red tongue and epigastric tenderness, counter-irritation over the stomach, a mild farinaceous diet, with perhaps the taraxacum pills to act on the liver for a short time, will have to be resorted to until these symptoms subside. Meantime the patient must exercise as much as he can without fatigue, and very gradually return to his full diet, using as a tonic an infusion of *staphylea* in tablespoonful doses three times a day, and taking freely a cold infusion of *althæa officinalis*. While in those cases where the cough is aggravated by a high grade of local irritation, accompanied by fever and some pain in the side, a few cups applied to the seat of the pain and followed by hot fomentations, with perhaps an emetic, are the chief means to be relied on.

There is another condition of the system in which there will be a certain grade of irritation of an active character, accompanied by a dry, irritating cough, which will require a course of treatment different from those just mentioned. A syrup prepared according to the following formula will fulfill the indications in such cases as well as any other:

R. *Sanguinaria canad.*
Asclepias tub. aa 3j.
Eupatorium perf. 3ss.

Steep in one and a half pints of water, strain, and add loaf sugar sufficient to make a syrup as thick as honey, of which a teaspoonful may be taken every hour or two, according to the urgency of the symptom for which it is prescribed. We now and then meet with a case in which the cough is so troublesome as to greatly disturb the patient's rest, and for which no ordinary remedy will be required. The following prescription will usually afford the requisite relief:

R. Tinct. *Lobelia*,
Tinct. *Camph et opii, aa* 3j.
Ox. Scillæ 3ij.
Aqua dist. 3vij. *Misce.*

Of this two teaspoonfuls may be given on going to bed. Or equal parts of the syrup of sanguinaria just described, and paregoric, taken in two teaspoonful doses at bedtime, will answer as well perhaps, and the opiate can then be omitted, as it should be, when not *positively* required.

A diffused soreness and undefined pain over the largest portion of the chest will occasionally be met with, for the relief of which I have usually prescribed five drops of the oil of tar, three times a day, taken on a lump of sugar, and the free use of a decoction of the white pine bark to the extent of a pint or more a day. These two remedies deserve more than a passing recommendation in the treatment of consumption. Their effects upon the system may be referable to their action on the skin and kidneys; but I have thought, from observation, that they had a particular influence on the lungs from the fact that the respiratory exhalations partake in a sensible degree of their peculiar properties, and I have often witnessed advantages so marked and decided as to leave no doubt of their favorable influence on the disease.

In the early stage of pulmonary disorders, I have witnessed decided beneficial effects from the persevering use of a pure article of *cod liver oil*. But, to afford any marked relief, it should be continued for a number of months. It may be taken in half ounce doses, three times a day.

The cod liver oil is one of those remedies the action of which upon the system is not very well understood. From the effect which it generally has, in sensibly increasing the flesh of the patient, I have been led to suppose that its beneficial influences were, in a great measure, to be ascribed to the fuel it furnished for the lungs; thus allaying the irritation which generally accompanies that stage at which alone I have witnessed good results from its administration.

In the last stage of this disease, and sometimes earlier in its progress, a weakening diarrhea will often require our attention. It is sometimes of a merely temporary character, resulting from the use of improper articles of food, and generally will be relieved by moderate abstinence for a day or two; but it is usually dependent upon relaxation and irritation of the

bowels, and in such cases more decided measures will be required. If not profuse, a decoction of *geranium maculatum* and *prunus virginiana*, say one half an ounce each to a pint of hot water, may be taken in stemglass doses, three or four times a day. But if it is profuse and exhausting, a more efficient course will have to be taken. Counter-irritation with mustard or wilted horseradish leaves over the bowels, and teaspoonful doses of equal parts of paregoric and tincture catechu, repeated upon every evacuation, I have found safe and reliable prescriptions. A mild farinaceous diet for a few days will also be necessary to arrest the difficulty. Or it will be preferable in many cases to use our compound neutralizing cordial in appropriate doses three times a day, which will relieve the nausea and diarrhea.

The hemorrhage that occasionally occurs at different stages of tuberculous disease may be but slight, and therefore create but little trouble for the physician, or anxiety on the part of friends. But in some cases it becomes so profuse as to alarm the patient and in fact to endanger his life. This subject, however, will receive special consideration in another lecture, and I will now simply suggest in general terms the means best adapted to give relief. Where it is but slight, a few grains of salt and the free use of a decoction of *lycopus virginicus* or bugle weed, with counter-irritation over the chest, will be all that may be required. But when the hemorrhage is profuse, ligatures to the extremities, as directed for the treatment of inflammation of the brain, with cups to the chest and the internal administration of two grains of capsicum and one grain each of opium and ipecacuanha, repeated every two hours, will rarely fail to give relief.

For those cases of consumption associated with a rapid pulse, difficulty of breathing, a good deal of nervous excitement and neuralgic pains, there is no remedy so reliable as *macrotys racemosa*. This may be given in the form of a syrup, prepared by making a decoction of the root—one ounce to the pint—and taken in tablespoonful doses three times a day; or from two to three grains of the macrotin may be administered in a little simple syrup in its place. If

this should create a headache, as it does when administered to the extent of producing its specific action, it should be lessened. It is proper to remark, that the macrotys, or its proximate principle, macrotin, is a powerful remedy, having a range of application in diseases of a number of organs not equaled by many others. Its therapeutic effects are mainly felt on the nervous system.

During the progress of consumption, though not confined to any stage, but more likely to attract attention in the latter, a profuse night sweat, usually preceded by a febrile exacerbation from the middle of the day, almost invariably occurs. In fact, it will be found upon careful inquiry to have all the general characteristics of a regular attack of intermittent fever. This may generally be arrested for a short time, and frequently for a week or two together, by the same remedies recommended for the genuine disease, and they will afford great relief to the sufferings of the patient, if nothing more. But generally the hectic fever and night sweats, if no others of the symptoms, will return, and require attention. I have used a decoction of amaranthus or crawly root with the most marked advantage, and have lately seen a recommendation, from a respectable source, of the same remedy. It acts on the homeopathic law, and given in decoction is sensibly diaphoretic, and seems to substitute the natural for the colliquative perspiration attendant on this disease. The old standing prescription for night sweats is the elixir of vitriol or diluted sulphuric acid,—five to ten drops, to be taken at bedtime,—and this does perhaps have some effect in these cases. Whatever may be given internally, there is probably no one remedy more likely to afford relief than bathing the surface before bedtime with hot whisky and following with brisk friction. I have also been informed that this difficulty has been speedily arrested by bathing the body with cold or tepid water at any time in the night when the sweats are profuse.

I have already, perhaps, anticipated most if not all that needs to be said on the bronchial complication so often met with in the progress of consumption, and I will only remark

may be useful to recapitulate the outlines of the treatment which I have recommended.

The great general principles governing the treatment of consumption are to change the diathesis and promote the absorption of tuberculous deposits. These objects will be best accomplished by the largest amount of exercise in the open air which the patient can endure; by bathing the whole surface of the body, especially over the lungs, followed by friction; by wearing a brace if necessary, and by full and frequent respirations; by adopting the most nutritious and often stimulating diet—such as rare beef, fowls, eggs, milk, bread and potatoes; by the inhalation, in certain complications, of various substances, such as the vapor of tar and iodine; the use of general tonics and alteratives—sanguinaria and taraxacum, prunus and staphylea, an occasional emetic, expectorant syrups with cough drops and mixtures; by the use of salines and mineral substances to supply the deficiency of these elements of the vital fluid; the long continued use of cod liver oil; by change of clothing, and in certain cases by change of climate.

LECTURE LI.

DISEASES OF THE HEART.

CARDITIS—INFLAMMATION OF THE HEART.

PERICARDITIS—INFLAMMATION OF THE PERICARDIUM.

ENDOCARDITIS—INFLAMMATION OF THE ENDOCARDIUM.

*General remarks — General symptoms of cardiac inflammation —
Physical symptoms — Auscultation — Palpitation — Percussion.*

While modern pathological research has done much to clear up the character of some affections of the heart not before accurately distinguished or understood, there yet remains much to be ascertained not only in regard to the causes of those disorders, but especially in respect to the therapeutics of this great central organ and its appendages. It may not, indeed, be difficult to describe the attendant symptoms, and the morbid appearances consequent upon the several affections of the heart, but in common with the rest of the profession I shall have to beg your indulgence in reference to the philosophical application of remedies for their cure. Our theoretical opinions may, in some cases, have been sustained by practical results, and to that extent have justified the adoption of particular measures in the treatment of this class of diseases ; but it must be acknowledged that, on the whole, very little that can be recommended as having a specific operation, has thus far been discovered. Yet at the same time it is true that in these, as in many other disorders, we have a knowledge of some general principles to aid us in the application of therapeutic measures, and also an experimental knowledge of the action of certain remedies on the general system, in other diseases, to guide our judgment, and to restrain that injudicious interference which the urgency of the

other modifications, I shall consider them under one general head, pointing out by the way the characteristic physical symptoms referred to.

It may be remarked that few if any diseases present a greater variety of *symptoms*, and none in which it is more difficult to determine a satisfactory diagnosis, than inflammation of the heart or its membranes. In some instances the disease probably passes through the several stages with slight and unimportant symptoms, and in others it occurs in complication with other diseases of the chest and rapidly proves fatal, without a suspicion of its true nature on the part of the friends or the attending physician. Instances, again, are not wanting in the annals of medicine where all the symptoms were supposed to be characteristic of this form of inflammation, and yet post mortem investigation detected no trace of the disease. It is frequently complicated with other affections of the chest,—thereby masking its true character and rendering it more likely to be overlooked. Hence, no doubt, its occurrence is more frequent than is generally supposed.

It most generally commences with the ordinary premonitory symptoms common to other inflammatory affections, but the development of its active symptoms is usually preceded or immediately accompanied by a chill, and followed as usual in such cases with febrile reaction, which is proportioned somewhat to the extent of the local disorder. The pain in acute inflammation of the heart is generally sharp and lancinating, and extends to the top of the shoulder as in pleuritic inflammation, though farther down the arm. The severity of the pain is always greatly aggravated by a full inspiration, and often by any change of position, or by pressure over the region of the heart between the fifth and sixth ribs of the left side. Patients feel the least pain by lying on the back, and hence that is the position in which they are usually found. A troublesome, dry, hacking cough increases the pain and, as in pleurisy, aggravates the sufferings of the patient; respiration is usually hurried, imperfect, and often irregular; the features are contracted and expressive both of bodily pain and mental

anxiety; there is irregularity of the heart's action, and often a sensation of fainting requiring constant fanning; the pulse is usually full and hard in the early stage, but soon becomes very small and rapid, often almost insensible at the wrist, and is generally irregular in its action. The skin is hot, except on the extremities; tongue furred and appetite wanting; urine scanty and high-colored, and the bowels costive; in short there are all the general symptoms that usually characterize other phlegmasial and febrile diseases, in which a diversion of the secretions and a morbid action of all the great excretories of the system have been produced. Dyspnea, already referred to, is one of the most constant symptoms and perhaps may be considered the most characteristic of cardiac inflammation. It often becomes so severe as to render articulation difficult, and respiration hurried and oppressed—in some cases thirty to forty per minute. Occasionally the disease extends to the diaphragm, giving rise to a troublesome and painful hiccup. The associated cough may arise from direct sympathy, but more generally from the extended irritation of the pulmonary structure in contact with the heart. It is fitful and irritating without expectoration, and often painful. The character of the pulse and certain physical symptoms are the only distinctive marks of the particular form of disease under consideration, and even these may be considered somewhat equivocal, since some of them at least coexist with neuralgic affections of the heart. In inflammation of the substance of the heart or carditis, and in inflammation of its lining membrane or endocarditis, the pulse is supposed to be more rapid and irregular, exhibiting a greatly disturbed and tumultuous action.

The *physical symptoms*, growing out of and connected with inflammation of the heart, though tolerably characteristic and satisfactory when they can be recognized, are often so obscure and difficult to detect as to afford very little reliable evidence. It should be remarked, that the action of the heart in health is indicated by a moderate pulsatory movement, which can be felt between the fifth and sixth ribs on the left side. An increase in this pulsatory movement, and perhaps a slight abnormal fullness in that region, especially in the

intercostal spaces, will distinguish the diseased action from the healthy. It should also be remarked that in health, by the aid of the stethoscope or by applying the ear directly to the side, we can recognize two distinct impulses occurring regularly but with unequal intervening periods. These impulses will often be perceived by placing the body in a certain recumbent position with the head on a pillow, and if the sounds are not communicated directly from the contraction and dilatation of the heart, they are probably by the impulse given to the blood as it is thrown through the vessels of the head. The minute shades of difference between the sounds can be more clearly distinguished by the aid of an instrument than by placing the ear in contact with the chest. The two sounds occur with every contraction and relaxation of the muscular movements of the heart, one immediately following the other and succeeded by a short interval of quiet. The first sound is synchronous with the pulsation of the large arteries, and nearly so with the pulse at the wrist, though minute observation will detect a slight difference. It is a duller sound and continues longer than the second, and can be best and most distinctly heard over a space of about two inches in diameter to the left of the sternum and below the fourth rib. This sound occurs during the contraction or systole of the heart. The second sound is much more jerking or quick, but more distinct than the first, and may be compared, when attentively observed, to a slight tap with the end of a finger upon the bony extremity of another part of the limbs. It occurs during the expansion of the ventricles of the heart, or what is called their diastole, and can be most distinctly observed over the semilunar valves, at the sternal extremity of the third rib, from its lower margin upward for the space of nearly two inches.

Various theories have been advanced to explain the cause of these sounds. But the most modern views, being predicated upon more numerous and extensive experiments, may be considered as very closely approximating the truth. The sound occurring simultaneously with the contraction of the ventricles is supposed to have a complex origin, or to proceed

from a combination of circumstances. The friction of the fibers of that muscular organ upon or against each other during their sudden contraction, as may readily be imagined, would produce more or less sound. This is rendered quite probable from the fact that sound is emitted upon the contraction of the heart which often occurs to some extent in some of the lower order of animals after that organ is removed from the body, and is entirely empty, or free from blood. Another, and probably not the least important, source of sound is the friction upon the sides of the large arteries, produced by the flow of blood as it is rapidly forced in a regular current out of the heart and through those vessels. More or less sound might also reasonably be expected from the movement of the valves as they close at the moment of the contraction of the ventricles to prevent a return of blood into the auricles. The contraction of the auricles, so immediately preceding the ventricular contraction as to be almost one continuous act, no doubt adds somewhat to the sound recognized at this time. By such facts as these, which have been carefully observed by experiment, the systolic sound is accounted for.

But whatever cause may be assigned for the sound thus emitted, it has been satisfactorily determined that it differs very considerably in different individuals, owing no doubt in part to the difference in amount, or thickness and density, of the cellular tissue and adipose matter intervening between the heart and the instrument used in the examination. It is also found to be much influenced by the thickness of the walls of the heart, a thin ventricle naturally permitting the passage of a louder and clearer sound than a thicker one, as shown by the fact that the sound emitted by the right ventricle is clearer than that of the left.

The diastolic sound is without doubt mainly owing to the contraction of the aorta and pulmonary artery during the dilatation of the ventricles, by which the semilunar valves are suddenly closed. The movement of the muscular pouches receiving the blood as it returns on completing its circuit, and the friction of the blood against the walls of those vessels,

also probably add to the sound recognized in this case. This sound, like the systolic, differs in different individuals, and perhaps from similar causes. In addition to the thickness of the walls of the chest, the peculiar formation of its bony structure, by which the heart is brought more or less immediately into contact with its parietes, will materially modify the sounds emitted. They will also be greatly modified, both as regards their regularity and frequency, by the condition of the individual at the time of the examination. Thus any effort, physical or mental, which increases the vibrations of the heart will produce a corresponding increase in the sounds emitted. And in such cases the interval between the systole and diastole will be much shortened, the distinction frequently being nearly destroyed, so that they are apparently merged in one continuous sound.

As already remarked, the thickness of the walls of the chest will modify the *force* of the sounds. Upon the same circumstance will depend the *extent* to which the sounds will be conveyed and can be recognized by an examination on the surface of the chest. In a very fleshy person the sounds will not only be less distinct and appreciable but will be confined to a space much more limited than in individuals of a different formation. The same laws will modify the propagation of sound in those cases of pulmonary disease in which hepatization of the lungs has taken place. In such cases the sounds of the heart's action will be more distinct, and also be heard over a greater extent of surface than when the lung possesses its healthy and spongy condition. The impulse is thus more readily conveyed through the medium of an inelastic and solid substance than through the more elastic and yielding one.

We have thus far mainly considered the sounds emitted by the action of the heart in a healthy state. Let us now consider the sounds recognized by auscultation in a diseased condition of the heart. Auscultation will discover either new and peculiar sounds, or the modification or alteration of those pertaining to health. The latter may be changed in various ways; either in frequency of repetition, the force or

intensity of their action, or the regularity with which they are developed. In some cases the two sounds may be repeated so frequently and persistently as to justly mark the case as a disease of the heart uncomplicated with symptoms of other forms of disease; or one or the other of the sounds may be delayed so as to exhibit an irregularity incompatible with healthy action; or the first sound may be compressed, or the contraction of the ventricles may take place in quick succession, so as to give it the character of a double sound. It is said that the systole may be repeated three or four times in quick succession, with a kind of continuous and jerking sound. This irregularity may occur in many forms of disease, as shown by the singular irregularity of the pulse at the wrist. Thus two or three systolic sounds may be heard almost simultaneously, though a difference will exist sufficient to mark the separate contractions, and then they will suspend or defer beyond the period at which they ought to occur; then again, one systolic sound may follow another at very unnatural periods for a few times, when a few others will be heard in more rapid succession. It should be remarked that these may exist with organic disease of the heart, and they may also be associated with or grow out of mere functional disorder of that organ; but when they occur with other symptoms of morbid action they acquire an importance not otherwise belonging to them.

The unnatural or superadded sounds may exist simultaneously with the natural, and may so obscure the natural sounds as to render them nearly or quite inappreciable. They are mostly denominated murmurs, or modifications of the bellows sound. The latter is so called from its being, when uncomplicated, smooth and blowing like the sound of a pair of bellows. As it is dependent upon the heart's action, it must of course partake of the irregular character of its contractions produced by alterations in some portion of that organ, or in the vessels proceeding from it. Thus it may be either double or single, of a loud or low tone; it may be shortened or much protracted. In some cases it may be so loud and continued, like the sound of the bellows, as to

DISEASES OF THE HEART.

~~Excessive irritability~~ of the heart produced by the want of ~~appropriate~~ stimuli, alone furnished by the fibrin and ~~albumen~~, of which there is a deficiency in the condition ~~of the blood~~ referred to, or whether the positive deficiency in the bulk or amount of the circulating fluid, that may for a time exist in such cases, causes the excessive action of the heart usual in this condition of the blood, and thus develops the sound, is not very easy to determine. But, however this may be, the two are so uniformly concomitant as to suggest the conclusion that the murmur is in some way produced by the extraordinary action of the heart under such circumstances. This view is confirmed by the fact that any circumstance which excites undue action of the heart in anemic cases immediately develops the sound.

The filing or rasping sounds occasionally observed in cardiac affections are supposed to be, and probably are, produced by the flowing of blood over the surface of the diseased orifices which have been roughened by inflammation, or by the adherence of tenacious lymph, or by osseous depositions or cartilaginous formations. This modification of the bellows sound presupposes more or less organic change in the valves or openings of the heart, and somewhat resembles the bronchial sound produced by congestion and hepatisation of the lung, but can readily be distinguished by holding the breath, which of course will arrest the sound if it proceed from that source, but not if it is connected with the heart.

Various other sounds are described by the authorities, such as the friction sound, which is said by Prof. Wood to proceed from the rubbing together of the pericardium, roughened by inflammation, and the opposite surfaces of the membrane. If by this is meant that the pericardium rubs against the reflected membrane forming the external surface of the heart, and thus emits a sound, it may be probable. But if it is supposed that the exudation of coagulable lymph renders those surfaces rough and thereby produces sound, it is a different explanation from that given to account for the friction observed in pleuritic inflammation, for, in the latter case, a dry condition of the membrane is prerequisite to the sound.

thus supposed to be produced. I acknowledge my inability to explain satisfactorily the whole phenomena of these sounds, and I have many doubts whether the explanations usually given are sufficient.

The creaking-leather sound is said to be produced by a rough and stiffened condition of the pericardium. A churning or washing sound is said to result from an unusual or excessive amount of fluid in the pericardium. This symptom may be expected in affections of the heart connected with dropsical effusion.

Whatever the character, extent, and persistence of the sounds recognized in cardiac disorders, those growing out of organic alteration in the ventricular outlets and in the valves connected with the auriculo-ventricular circulation, will depend not only on these alterations, but also in a very remarkable degree on the action of the heart at the time the examination is made. This is very satisfactorily shown from the difference between the murmur during the systole and that which accompanies the diastole, and also the difference uniformly observed between the murmur upon the occurrence of any circumstance exciting the heart to an undue contraction, and that which is ordinarily associated with the disease.

Another means of determining the healthy condition and natural action, as well as the diseased action and organic changes of the heart, is by the *application of the hand* to that part of the chest directly opposite the apex of the heart. It would appear from various observations made upon animals that the heart elongates during the ventricular contraction. This would render it more than probable that the pulsations felt at the point where the apex ordinarily belongs are owing to the force with which the point of the heart is thrust against the intercostal space and the ribs. The impulse thus produced will be most distinctly felt in ordinary cases of healthy and medium formations, when an individual is examined in an erect position, by placing the hand near the fifth or sixth ribs, a little more than two inches to the left of the sternum and a little less below the nipple. The precise point, however, differs very considerably in individuals

having different conformations of the chest. It also differs somewhat at particular stages of respiration, and depends upon the particular position of the individual at the time of the examination. Thus it would be found at different points in persons, the conformation of whose sides was greatly unequal. Suspended at the base with its apex hanging loose between the lungs, the position of the heart would of necessity be considerably changed or different from other cases where the two sides of the chest are more nearly equal. So also, from this pendulous condition of this heavy organ, its contiguity to the ribs would be greatly influenced by a recumbent posture upon the back. In this position the pulsations will be less distinct, while the individual, by inclining toward the face on the left side would bring the heart nearer the walls of the chest, and, consequently make its pulsations far more perceptible. In like manner during the act of inspiration, as the posterior extremities of the ribs are fixed to the spine, and the expansion of the chest moves them forward and upward, the increase in the cavity of the chest must of necessity be in its anterior portion, thus leaving the heart farther removed from its anterior walls during the act of inspiration than when the lungs were not inflated. Hence the pulsation of the heart will be less distinctly felt during the act of inspiration than expiration. At the same time the point at which the impulse of the heart can be felt will be lower when the lungs are inflated than when they are contracted.

From these facts it will be apparent that, when you desire to make a critical examination for the purpose of fully determining all the abnormal conditions, it will often be necessary to examine the patient in different positions. It should also be remarked that the physical condition of the individual, the character of the circulation dependent on the temperament of the person, the age and other circumstances, should all be taken into consideration, as they will greatly vary the impulses of the heart recognized by the touch, in the same manner that such circumstances influence the sounds perceived by auscultation. Thus in a person of lymphatic tem-

perament and sluggish circulation, with a deep and dense adipose tissue intervening, the impulses of the heart will be less sensible and weaker, than in persons of a different make and condition. In children and younger persons they are usually more distinct than in adults.

In the present state of our knowledge it cannot be determined, beyond the influence of temperament, to what the difference in the pulsatory movement of the heart in different individuals is owing, and fortunately it is not now supposed to be a question of much practical importance. It is well known, however, that the force of the heart's pulsations, as recognized by the hand, is greatly modified by their frequency, an important fact, which ought always to be borne in mind in the investigation of disease. It is also important in our examinations of cardiac disease to bear in mind the character of the respiratory movements, as we might be led to suspect the former from abnormal appearances connected with the latter. We find in health a general relation between the number of pulsations and respirations in a minute, which, as determined by various authors, is as one to four and a half. If, therefore, in our examinations we should find a marked disparity between the respiratory and cardiac movements, differing greatly from the normal relations, it should always be considered as worthy of attention, and receive its due weight in determining disease. It may be remarked, however, that a frequent or hurried respiration without a corresponding action of the heart, would not indicate affections of the latter; while a very rapid and irregular action in the heart's movements, with the respiratory action diminished in frequency, or not increased, would at once suggest the existence of cardiac affection, and should lead to farther investigation.

In health, the ordinary pulsatory movements are regular and at uniform intervals, though some deviation would not invariably imply disease. In the convalescent stage of certain diseases, it is not uncommon to find a very considerable irregularity of the pulse, and in persons considerably advanced in life an intermitting pulse is a very common occur-

rence during the progress of febrile action. So also in a person far advanced in life, irregularity of pulse without any evidence of cardiac affection is often known. The intermission at the heart may be produced by the weakened contractile power of the heart, but it cannot be supposed to occur invariably from this cause where no cardiac affection exists. In addition to these causes of irregular pulsatory movements, are those irregularities occasionally met with in children from birth, and those so often dependent on nervous affections, when we can scarcely suspect any organic disease of the heart.

Organic affections of the heart, as might be supposed, will produce very marked alterations in its impulses. Thus their strength will be greatly augmented by hypertrophy or any other abnormal development in the walls of the heart, and their force and impulse increased by any circumstances highly stimulating to that organ. In many cases its action becomes so excessive as to produce a painful sensation and a feeling almost like forcing through the walls of the chest. On the other hand the force of the impulse and the strength of the pulse at the wrist are sensibly diminished by the atrophied condition of the organ, or by any other circumstance which operates to diminish the thickness of its muscular walls, or debilitate its contractile power. This weakened condition is shown in various diseases in which the pulsatory movement cannot be discovered at the wrist.

As already remarked the extent to which the impulses of the heart can be felt, either in its enlarged or contracted condition, will depend upon its increased or diminished action. When hypertrophy is associated with an excited or febrile state of the system, the impulse of the heart will be felt over the whole body, and even be extended to the bed on which the patient may be placed. In some cases its action is accelerated to such a degree beyond the natural standard as to render it difficult to distinguish between the pulsations, which often become at the wrist almost one continuous stream. But the most common deviation from its natural action is discovered in its contractions ; in some instances intermitting

percussion yield a sound decidedly dull. This dullness will not be confined to a precise circumscribed boundary, not yielding the same resonance over its whole surface, but gradually diminishing as you diverge from the center of this space in all directions, till a well defined pulmonary sound will be produced. The latter, however, will not result from an impressive blow until you remove beyond the boundary of the heart's circumference. Though we are able to recognize a moderate degree of resonance in those portions of the lung projecting over and lying in contact with the heart, yet a critical examination by one accustomed to these shades of sound will be able to mark the boundary of the heart's position. It is hardly necessary to remark that this dullness of resonance will be greatly influenced by the position of the body at the time of the examination. Thus the nearer the heart lies in contact with the walls of the chest the more dull and obtuse will be the sound. So that when the body is erect, and the heart in its normal position, the dullness will be greater than when reclining on the back. The resonance will be increased or diminished, accordingly as the position removes the heart from or brings it more forcibly against the walls of the chest. The dullness is also increased out of the space occupied by that portion of the heart in contact with the walls of the chest in proportion to the extent of the disease of the lungs and pleura in contact with the heart.

Thus, then, the inferences deduced from the signs afforded by percussion are, that the gradual shading off of the dull sound over the point where the heart lies in contact with the walls of the chest indicates a healthy condition of the lung, and an increase of the space, usually dull upon percussion, indicates an increase in the size of the heart. The same phenomena will be found in cases of effusion into the pericardium. It will thus be seen that the evidences afforded by percussion are not so unequivocal as those afforded by some other methods, yet, when considered in connection with the symptoms recognized by other methods, they are not to be overlooked in investigating cardiac affections.

LECTURE LII.

INFLAMMATION OF THE HEART—CONTINUED.

Diagnostic symptoms—Anatomical developments—Treatment.

Having considered the general symptoms and physical phenomena connected with inflammation of the heart, I will now detain you a short time by describing the distinctive symptoms developed by the diseased action of its several portions. *Inflammation of the pericardium* is characterized by greater dullness on percussion, with more or less prominence in the region of the heart, owing to the effusion and swelling that usually accompany it, and also by the physical symptoms (heretofore described) recognized by auscultation. The most prominent of these local or physical symptoms is the creaking sound compared to that produced by new leather, which however seldom continues longer than a few hours and cannot be considered of much importance. Another sound is described by Dr. Watson, of London, which he considers diagnostic and calls the "to-and-fro sound." It is caused, he says, by the rubbing together of "the two contiguous surfaces of the pericardium roughened by lymph." The pericardium proper is the sack filled by the heart, and the rubbing of its "two contiguous surfaces" is a physical impossibility; but if the author means, what I suppose must be his meaning, that the inflamed and roughened serous surface of the pericardium comes in contact with the serous membrane on the surface of the heart, and produces a to-and-fro sound, that would be possible and intelligible. This sound is said to be heard during the contraction both of the ventricles and auricles, or during the systole and diastole of the heart. Dullness on percussion

is generally more extensive than in affections of the lining membrane. The dullness usually confined to a small space over the region of the heart, and recognized by percussion in *chronic*, is considerably increased and extends over a larger space in *acute* pericarditis.

The physical symptoms of *endocarditis*, differing from pericarditis, are the bellows sound, resulting from physical obstruction, either temporary or permanent, in the ventricular or auricular openings of the heart; the sawing or rasping sound, produced by a roughened condition of those outlets; and the vibratory sensation imparted to the hand when placed over the region of the heart.

The physical symptoms connected with *carditis* are in no particular different from those I have mentioned as peculiar to the other two forms of inflammation of the heart.

The *anatomical* relations of inflammation of the heart have been carefully studied and described with considerable exactness by a number of eminent pathologists, in whose observations we find a general coincidence. I shall not attempt to give you anything more than the general outlines of the subject; sufficient, however, to afford a reasonable understanding of the physical phenomena developed during the progress of the disease, and for general practical purposes. In order the more distinctly to comprehend the physical symptoms of the different modifications of acute affections of the heart, I shall describe separately the morbid appearances resulting from each modification.

In *acute* disease of the pericardium the most prominent anatomical characters which have been observed, where the disease has proved fatal, are an unnatural redness in the inner surface of this membrane, the effusion of serum more or less extensive, and the exudation of a coagulated effusion upon the inner surface. The injected condition of the vessels of this membrane rarely exhibits a very bright or red appearance, but usually inclines to a purplish or dark color. Nor will this appearance be observed uniformly over its entire surface, but presents itself in small patches, or arborescent and radiated lines more or less extensive, while the other portions

becomes quite thick, and exhibits on its adherent surface a smooth appearance exactly adapted to the membrane whence it proceeds, while the other surface is rough and shreddy, often exhibiting a porous or spongy appearance, resulting probably from the constant agitation it undergoes from the increasing motion of the heart.

Another peculiarity of this adventitious formation consists in its liability to become organized, differing in this respect from the deciduous formations which occur in the mucous membranes. This difference arises from their different elementary composition. The formation of organized tissue in the serous cavities and especially in the pericardium is abundantly demonstrated, not only by the existence of vessels in it, but also by becoming the seat of vascular engorgement, analogous, in all respects, to the condition of the vessels out of which it was originally formed. This accidental formation is not only subject to distinct organization, but is also amenable to the same organic laws that govern and control other structures of the human system. Thus the growth and formation of other foreign and even unique structures have been found connected with the membrane: such as cartilages, and even points of bone. It is also the seat of purulent accumulations, and this, it is said, has occasionally been found with tuberculous deposits.

The substance of the heart is not always involved in diseases of the pericardium, except in those of a chronic character, or in the acute forms when the inflammatory symptoms are but slight. But in the more aggravated acute inflammatory condition of this membrane it most generally participates, to a greater or less extent, and is found upon examination changed in its appearance. Weakened by the excessive action induced by disease of a part so closely allied to it, and embarrassed by the weight of the accumulated fluid surrounding it, the atrophied or diminished condition often observed in such cases might reasonably be expected. But when the alterations produced by disease have developed adhesion between the pericardium and the heart, enlargement and dilatation of the ventricles, and in some cases ossification

It has been said that the effusions which would naturally follow or be associated with the inflammatory process in endocarditis are generally washed away by the action of the blood upon the surface of this membrane; yet this is not always the case. Either by being very tenacious or adherent when poured out upon its surface, or by being effused under the epithelium of the membrane, deposition of lymph, sometimes in the form of distinct layers, but more commonly in the form of separate granules of variable sizes, up to the bigness of a small bean, frequently takes place. These morbid deposits, however, do not appear indiscriminately over the whole surface of the endocardium, but manifest a striking preference for the valves of the heart, and especially for the borders of those parts, and are often clustered together. They usually have the appearance of, and no doubt truly are, organized growths or formations of irregular sizes and shapes. Analogous to these are the "globular vegetations" described by Laennec, of a more regular and spherical shape, of a pale straw color, and enclosed in separate cysts; "varying in size up to the bigness of a pigeon-egg." They are of rare occurrence.

A result of chronic disease of this membrane by no means uncommon, is the formation of osseous and cartilaginous depositions, and fibrinous collections, most generally found in the hollows around the "auriculo-ventricular" orifices and the valves about them. They occur mostly at an advanced period in life, or at least after the middle age; though they have been observed in younger persons and even in young children. Thickening of the whole membrane frequently occurs, exhibiting a corrugated, opaque, and light-yellow or milky appearance. In such cases it has the tenacity and consistence of tendon, or a cartilaginous hardness; it often nearly fills up the "auriculo-ventricular and arterial orifices" through which the blood is forced with great difficulty, thus giving rise to hypertrophy and dilatation, or some other organic disease of the heart.

The *diagnostic* symptoms of this affection have already been referred to, and I will only repeat that the bellows,

isted only in a circumscribed portion of the heart abscesses have been found which resulted in the production of ulcerative absorption. This more frequently occurs on the internal surface than its external parts, extending in some instances deep into the substance of the heart.

The question in regard to another result of inflammatory action in the substance of the heart—so common in less highly organized structures—to-wit, *mortification*, has been one of some interest. It is now pretty generally conceded that it does occur. Softening of its structure is another result, occurring either in connection with hypertrophy or dilatation of the walls of the heart, or independently of any other affection. This condition may be confined to a portion or extend through its entire structure, and produces a very relaxed or flaccid state of the organ, so that it can be torn with great facility, and the finger can be thrust through it as through wet brown paper. The color of the heart in this disease is different in different cases. Most commonly, however, it is a deep red; but occasionally a lighter red, and then again a more dark or mahogany-like color; while in other cases it has a brownish, and sometimes even a grayish or pale yellow tinge.

This condition of the heart often occurs in connection with other affections, such as low and malignant grades of fever, and chronic disease of the lungs, but whether in these cases what is understood by the term inflammation is the cause of that condition is a matter of doubt, notwithstanding such is the opinion of most modern pathological writers. Unfortunately, however, for the progress of medical science too much importance has been attached to the revelations of the scalpel in post mortem examinations. The symptoms, if any exist in purely cardiac affections, have not yet been determined. I may remark in this connection that induration, like that of softening, is at present believed to be produced by inflammatory action. It rarely affects the whole organ, but is confined to a part of it, and is usually associated with hypertrophy. The degree and extent depend upon a variety of circumstances not now necessary to consider.

The *treatment* of the inflammatory affections of the different parts of the cardiac apparatus, even if we are able to distinguish the particular portion or structure involved, is essentially the same. In other words the indications are the same, whether the inflammation is located in the pericardium, the endocardium, or the substance of the heart proper. In the first place, if the case is accompanied by much pain, one or two large cups and scarification should be applied. The cups should be made to draw thoroughly, and two or three ounces of blood taken away directly over the region of the heart, in order to produce an extensive revulsive effect. This may be repeated, during the continuance of the active symptoms, two or three times, and followed each time by frequent applications of the hot hop fomentations to the affected part.

In regard to general blood-letting in this disease Prof. Wood says, "it is not to be employed indiscriminately and unsparingly in all cases." "Great loss of blood indirectly stimulates the heart." "The blood is rendered so thin and watery that it is incapable, as ordinarily distributed, of supplying the wants of the system ;" "and such are the sympathies of the heart that a sense of this deficiency, transmitted everywhere from the periphery of the circulation to the nervous center, excites, on every occasion calling for an increased expenditure of blood, excessive action in that organ, in order, by a more rapid current, to compensate for the defective quality of that fluid." If the learned author had gone one step farther and said—what I think has been fully demonstrated to be the fact—that it also increases the local engorgement, all the facts would have been stated, and I should have given my entire assent to the doctrines set forth. It is, therefore, for these reasons, and others given in a former lecture, that I object to general blood-letting in this as in other cases.

The small amount obtained by local bleeding, and the direct influence thus exerted on the disease, render cupping a remedy at once unobjectionable and effective in the treatment of inflammatory disorders. There are few individuals so deficient in blood, or so sensitive to its loss, that they will be in any way injured by losing the small amount usually

doses, are valuable alteratives and diuretics. The excessive action of the heart should be partially controlled by the use of the tincture of digitalis and sanguinaria, in drachm doses three times a day. I have found the sanguinaria a very valuable remedy in all those diseases in which excessive action of the heart was a prominent symptom, or where there was evidently a loss of action in the absorbent vessels.

different cases. In some instances the walls of the heart will be simply thickened, without any increase or diminution of its cavities; in others the walls will be augmented in size with the chambers, corresponding to the part affected, dilated; while again, the dimensions of the cavities will be diminished somewhat, in proportion to the thickening of the muscular walls. This unnatural increase is sometimes, and in fact most generally, confined to the walls of one ventricle, and this most frequently the left; the auricles rarely participating even when the other parts become greatly enlarged. Instances have been observed where the hypertrophy was confined to a small portion of the heart, as to its apex, base, or the septum of its ventricles, etc.

Hypertrophy of the heart increases its density, so that it exhibits a more firm and generally more red condition than natural, and presents the characters usually indicative of induration, though this is by no means a uniform attendant, as softening of the muscular structure is no uncommon associate of cardiac enlargement.

This disease is usually *brought on* by long continued and excessive accumulation of blood in the cavity, resulting from disease of the semilunar valves, or diminished condition of the ventricular outlets, associated with increased muscular action as a consequence of this obstruction. It is therefore usually a secondary affection, dependent upon some disease previously existing in this organ. As a natural consequence of the increase in its muscular structure, its capacity for contractile action is proportionally developed. Though this capacity may be supposed to exist, it does not follow that it should of necessity be constantly exercised, for it may remain latent, or be held in reserve for appropriate emergencies. Hence in some cases, when the system is quiet and composed, very little unnatural action will be observed in the heart's contraction. But when there is great obstruction in the outlets of its ventricles, there will be a more labored and tumultuous action. The blood will then be thrown with greater force and velocity to the different parts of the system, and thus produce, when the obstruction is confined to the left

sensible throbbing felt by the hand when applied to the seat of the disorder, and often a real deformity by projecting the ribs and sternum beyond their natural line. I have witnessed a number of well marked cases of this description.

In some instances severe, sharp, and shooting pains, extending into the left arm similar to those of angina pectoris, will occasionally be felt, associated with a sensation of weight and unnatural oppression in the region of the heart and epigastrium. The pulse is always more or less affected in every stage of this disease: in the early periods it is more full and strong—though sometimes soft and not strong—while a dizziness or sudden and severe paroxysms of headache, are experienced, with ringing in the ears, a flushed and often swollen condition of the face, a prominent and suffused state of the eyes, and frequently bleeding at the nose; and in the advanced stages of aggravated cases, feelings of drowsiness and stupor come on, which terminate in apoplexy. The lungs are very liable to become involved during the progress of the disease, partly in consequence of the force with which the blood is determined to those organs. The capillary vessels thus become weakened, and pulmonary congestion or emphysema is very apt, sooner or later, to take place. Following this condition, more or less extensive serous effusion into the cellular substance of the lungs, or in some instances into the pleural sac, will be found to exist. This condition would of necessity produce considerable disturbance, and often serious embarrassment, in the functions of the lungs. Dyspnea and cough, with expectoration often of a copious character, will be likely to occur under such circumstances, and if associated with a tuberculous condition of the system, genuine phthisis is very sure to follow with all the characteristic symptoms of that disease.

Other organs of the body almost of necessity soon participate in the disturbance thus existing in the great central and vital organs. The blood, failing to be appropriately distributed and properly changed in its chemical qualities, becomes loaded with carbonaceous matter and effete, morbid materials, and, almost as a matter of course, in passing through the

different organs performing the depurating functions of the body, superinduces disease. Hence we find congestion of the stomach and liver, and often of the bowels, and torpor of the kidneys, usual accompaniments of this disease. The condition of the blood referred to will be shown by the appearance of the capillary circulation on the surface of the face and extremities, which often become purple and edematous. This edematous condition of the feet will frequently be soon followed by more general dropsical symptoms; the entire limbs will assume an edematous condition, which will extend to the body, and finally to the cellular membrane over the entire system. Nor is this serous effusion confined to the cellular structure of the system, but will be found, in extreme cases, filling the large cavities of the chest, abdomen and pericardium. As a matter of course, in this condition, the urinary secretions become scanty and high-colored, and the skin is dry, and often towards evening above the natural temperature. The shortness of breath becomes more severe and often distressing, the fits of coughing more frequent and troublesome, until, with the difficulty of breathing and the irritation from the cough, the patient is unable to lie down, and therefore generally sits up altogether, inclining forward, his head resting on the back of a chair, distressed with a sense of impending suffocation, his whole body agitated, his chest heaving with efforts at expansion, and an appearance of inexpressible suffering and distress depicted upon his countenance. Thus the disease goes on gradually increasing in the severity of its symptoms; the appetite fails; the whole vital force seems exhausted—the patient sinks into profound stupor and insensibility, and dies.

As different modifications of this disease may exist without any corresponding symptoms during life, I shall not attempt to describe them all. It will be proper, however, to notice some of the peculiarities which distinguish *hypertrophy* from *dilatation*. These depend mainly on the character of the circulation. But as the two conditions frequently coexist in the same case, we are oftentimes able only to infer their existence from the blending of the characteristic symptoms of each.

As it is the contraction of the left ventricle of the heart that sends the blood over the body, a more vigorous and forcible impulse of the systemic circulation will always exist in hypertrophy of that ventricle without dilatation. The other main peculiarities will be a full, hard and bounding pulse, with a kind of agitation or jarring of the whole system at every contraction, a general appearance of health and vigor, and frequent attacks of vertigo, headache and bleeding at the nose.

The physical symptoms will differ with the degree of enlargement. If the latter be slight, the dullness on percussion in that region will be but little changed from that of health ; while if the enlargement is extensive the dullness will be proportionally increased. But in consequence of the thickening of the walls of the heart, the sounds emitted on auscultation will be sensibly diminished. The first sound will be greatly prolonged and considerably obscured, and even in some cases will be scarcely recognized at all, while the second sound will also be more feeble and the interval less distinct.

But when hypertrophy is associated with dilatation there will be a less vigorous action of the heart, a weaker pulse, and less of the general appearances of health and strength. The physical symptoms will also be considerably different. The field of the heart's impulse, as recognized by the application of the hand and by percussion, will be considerably increased, and, as I before said, there will be a sensible enlargement or projection of the sternum and ribs ; while the sounds of the heart will be heard more distinctly in consequence of the diminished thickness of the walls of the ventricle, and will be audible over a more extended space. The sounds will also be often heard by patients themselves, especially upon the occurrence of any circumstance productive of undue arterial action. The diseases of the valves associated with these modifications of cardiac affections will produce the sounds on auscultation peculiar to each.

The difference between hypertrophy of the left ventricle and that of the right is not always easily recognized. But since the latter portion of the heart is concerned in the pul-

cal effusions, and all the successive symptoms, till death closes the scene.

Causes. There are many things capable of inducing hypertrophy and dilatation of the heart; both being produced in some instances by the same cause and at the same time, or the one condition aiding in the production of the other. Thus whatever is calculated to produce and keep up a long continued and excessive action of the heart, tends to weaken its power and relax its muscular fibers, which thereby offer a continually diminishing resistance to the excessive action, and dilatation follows. This effect is very liable to be produced when there is no great constitutional vigor of the system, and it will usually be found that the relaxed and weakened condition of the general system—so universally attendant upon this disease—is not produced by it, but is the predisposing cause of that affection. But when the actual increase in the muscular fibers of the heart coexists with dilatation or enlargement of its cavities, a mixed condition of the general system will be found to obtain. Neither the vigorous and powerful general muscular developments that characterize those constitutions affected with pure hypertrophy of the heart, nor the loose, weak and frail organization of the fibrous tissues peculiar to those affected with dilatation alone, will be observed. This mixture of symptoms appears to be most commonly connected with the disease, and hence most of the cases met with are found to have both hypertrophy and dilatation.

The fact that whatever produces long continued excessive action of the heart is favorable to the development of hypertrophy, accords with the general principle that great and continued muscular action in any set of muscles produces a corresponding action in their nutritive functions, and a consequent increased growth and power in those muscles. This well established principle applies to the heart equally with any other muscle or set of muscles of the human body. Accordingly we find the most common exciting cause of hypertrophy to be excessive and long continued muscular exertion of any description. So also any other influences calculated

to produce and keep up unnatural action in the heart will have a similar effect, such as excessive sensual indulgences, very stimulating food and intoxicating drink, prolonged mental excitement, etc. Rheumatism and gout are also said to be among the causes of this and kindred diseases of the heart, and it is reasonably supposed that irritation extended to the heart from chronic diseases of its investing or lining membranes may produce this affection. So also prolonged disease of the cardiac valves may result in an extended irritation of the muscular substance of the heart, though it is more probable that valvular obstructions affect the heart by requiring increased efforts to force the blood through the narrowed apertures, which usually exist in such cases. This is peculiarly the case when there is contraction, from any cause, in the mouth of the aorta. The same causes operating on a system constitutionally weak and relaxed will produce dilatation of the ventricles of the heart, and this condition of the system must be taken into consideration when searching for the evidences of dilatation.

Prognosis. The diseases under consideration are the most common affections of the heart, and fortunately, if not connected with serious derangement of the valves or of the muscular structure, may be considered as admitting of great amelioration, if not susceptible of entire and radical removal. I have observed these affections more frequently among the young than the aged, and have found that they could be readily arrested, and as a general thing entirely cured, even to the reduction to a natural condition of a considerable projection of the ribs and sternum. This result, in one case which I especially recall, could not have been referred entirely to the suspended growth of the heart and the advance of all other portions of the system, since the patient in that case was nearly matured, though still young. The means employed in the cure of the case were predicated upon the principle that *rest* is necessary to diminish the size of an organ.

It may therefore be said that hypertrophy and dilatation are generally curable, but that the prognosis is decidedly favorable when they are connected with other and more

serious affections of the heart, such as softening of its structure or organic derangement of the valves, or with dropsical effusions in the pericardium, or extensive disease of the lungs producing dyspnea and asthmatic affections. It is also unfavorable in cases unconnected with more serious diseases, where the patient is considerably advanced in life. Such cases, however, may linger on for many years, or until they become connected with other affections, before they prove fatal.

Treatment. In preparing for the treatment of these modifications of cardiac affections, the prime consideration is to obtain a clear insight into the cause of the disorder. Without this, our practice will be empirical and uncertain, and may be eminently unsuccessful, while with it we shall have a clear conception of the indications to be fulfilled, and a reasonable prognostication of the issue of the case.

For these, as for most other disorders, whether of an inflammatory character or not, it is notorious that the authorities generally recommend blood-letting as the first and most important measure. Without stopping again to discuss this subject in full, I would merely ask with what show of philosophy general blood-letting can be advised, either as connected with the cause of those disorders or with the indications which common sense and even the book authorities often point out as necessary to be fulfilled? Where among the ordinary diseases, or even those of an inflammatory character, can we be directed to one in which excess of blood is assigned by any authority as its cause? If, then, the quantity of the blood, or even its quality, has borne but a secondary part in producing the disease, what principle of philosophy or physiology can be invoked to sustain the practice? And if it is not even claimed that disease is mainly produced by those influences, how can it be claimed that general blood-letting can remove the cause, and what shall hinder the conclusion that it is not a curative measure? It is very true that patients recover after being repeatedly bled. So they often recover when they are not treated at all, and frequently when they are otherwise badly treated. Yet it should not be said in

him upon a plain but nourishing diet, and upon the use of general alteratives and tonics.

Having previously, on several occasions, obtained decided advantage from the use of the *euonymus atropurpureus* (wa-hoo—Indian-arrow) in the form of a syrup, I concluded to administer that article in the present case, and in order to diminish the excessive action of the heart, I added *sanguinaria* to it in the following proportions :

R. *Euonymus atrop. rad. cort.* 3ij.
Sanguinaria, rad. 3ss.

pulverize, and make into a quart of syrup by boiling: add a pound of sugar and a gill of brandy. Of this the patient was directed to take an ounce three times a day, increasing gradually till its aperient effect was produced, and then continued in sufficient doses to regulate the bowels. The *euonymus* I had no doubt was well calculated to fulfill a number of important indications, being, at the same time, a mild cathartic, an active diuretic, and among the best of tonics, without exciting the action of the heart. The *sanguinaria*, as is well known to the profession, exerts a sedative influence on the heart's action, and a stimulating influence on the absorbent system. And thus the leading indications of the case were fulfilled after removing the original cause of the disease. The patient was also directed to bathe his feet in salt water every night, and rub the whole surface in broke water and whisky before going to bed. His diet was limited to a small amount of animal food with farinaceous vegetables.

As his prospect for physical labor, such as is required to carry on a farm, were cut off, he concluded to go to school and acquire an education, sufficient at least to answer the purposes of a country school teacher. In doing this he was cautioned to be particular not to confine himself improperly, nor to fatigue himself with study. He was directed also to take regular but moderate exercise, such as walking or buggy riding, and to be very particular not to over-exert himself in any way. He was told that he would have to persevere with these several measures for a year or two, with such alterations as the modifications of the disease might from time to time

suggest. Under this course, his tongue soon cleared off, the urinary secretion became free, the bowels regular, and the circulation was much improved. And by persevering in this course for a year and a half, without any important change, occasionally suspending the medicine for a week at a time, his symptoms all disappeared, the projection of the sternum and ribs considerably diminished, and his general health was greatly improved.

Other remedies might be suggested to fulfill important indications presented in some cases in this disease. When there is an impoverished state of the blood, a more generous diet may be allowed, and chalybeates, conjoined with the tonics already recommended, should be prescribed. Or when aperient and diuretic effects are not necessary, an infusion of the wild cherry bark possesses advantages not found in many other articles of this class. As a substitute for this, and perhaps acting with even more vigor on the circulation, the tincture of digitalis in from fifteen to twenty-five drops three times a day may be given: Opiates are generally objectionable, as they tend to lock up the secretions, and should not be used unless there is an imperative urgency for an anodyne, and even then a substitute will usually be found in the hyoscyamus and assafoetida. But when mere nervousness is the main indication for this class of remedies, the use of the valerianate of quinine will answer the purpose as well perhaps as any other. Or the decoction of cypripedium and scutellaria, in wineglassful doses, I have often prescribed with great advantage.

Another case came under my observation which presented less marked evidences of dilatation, but better defined symptoms of hypertrophy, though sufficiently mixed to render the treatment of a more antiphlogistic and less tonic character. In this case there was a better development of the muscular system, a firmer build, and more distinct indications of muscular growth of the heart. The pulse was full and hard, and a sensible shock was given to the system by a slight bellows murmur upon auscultation, indicating valvular disease; the complexion was florid, and only a slight enlargement in the

region of the heart, but a greater or more extended dullness on percussion. For the treatment of this case a stricter regimen, occasional moderate cathartics, and frequent mild aperients were prescribed, while the patient was allowed less exercise till the more active symptoms were subdued, when he was put upon the same syrup directed for the first case.

But in cases of hypertrophy unconnected with dilatation, presenting appearances and symptoms of great muscular vigor and general sanguineous plethora, a very different course of treatment will be necessary. If there is considerable pain in the heart, it may be advisable to apply a few cups to that region, following with the application of an irritating plaster, and administer a pretty free cathartic, one that shall produce a full and free hydragogue effect upon the system. This will be especially necessary if the tongue should present a white and furred appearance, and the bowels shall have been torpid, as is generally the case. The deficiency of the urinary secretion, usually attendant upon this difficulty, suggests the use of the supertart. potassa with equal parts of the common anti-bilious physic, in two or three drachm doses, and repeated if necessary until its full effects are produced.

It may be necessary to confine the patient to entire quiet for a short period, until the fullness of the system can be relieved, and the tension and arterial excitement which often accompany the case, can be subdued by cathartics and low diet, which should always be instituted in the early stage. But after these more urgent and active symptoms have been relieved, the patient should be directed to take moderate outdoor exercise, avoiding, however, every kind of effort that may tend in the least to increase the action of the heart or excite the system. It may be necessary for the patient to continue some length of time upon a very light and easily digested diet, but not to the extent of producing a predominance of serum over the more vital elements of the blood. When this is carried to a sufficient extent, a more generous diet should be directed, such as milk, rare eggs, etc.

In those cases with an active pulse, where the urgency of the symptoms seems to require immediate relief, ligatures

may be applied to the extremities as heretofore directed, and the patient may take twenty to twenty-five drops of tincture of digitalis and tincture of sanguinaria, equal parts, every two hours, until their effect is manifested upon the action of the heart. This may be continued more or less frequently until the general excitement and fullness are reduced.

Any complications that may be found associated with the disease may be treated upon the general principles which I have endeavored to inculcate, and which I have every reason to believe will be found satisfactory.

NERVOUS AFFECTIONS OF THE HEART.

Having already considered the most important, though not all of the *organic* affections of the heart, I come now to discuss for a short time the most common *functional* and *nervous* disorders connected with that organ; remarking, however, that I shall hereafter have occasion to refer to these nervous difficulties when I come to treat of spinal irritation.

It is sometimes no easy matter to distinguish between organic and functional disease of almost any description, and it is particularly the case in affections of the heart. Thus, in the early stage of organic disease of this organ, before extensive structural alteration has taken place, the symptoms are not so clearly defined and satisfactory as they become later in its progress; in fact they present more of the irregular and undefined appearances characteristic of nervous affection, and at this stage it can be only by a general and minute comparison that we can arrive at any satisfactory conclusion. And even then our conclusion must necessarily be somewhat presumptive, subject to confirmation or change as the progress of the case shall determine.

As a general rule the symptoms of nervous and sympathetic diseases of the heart are irregular and evanescent, subject to extremes of aggravation and decline from slight and apparently inadequate causes. Thus when we see an individual suffering, on any sudden mental agitation or from any trivial occasion, severe palpitation of the heart or sudden

syncope, which as rapidly subside or decline when the occasion has passed and the nervous system has become calm and equalized, we may reasonably conclude that this is not a case of organic disease. But when, on the contrary, the case presents unequivocal signs of cardiac disease, continuing more or less severe at all times and under all circumstances, whether the individual is agitated or composed, whether enduring great bodily effort or at rest, whether sleeping or awake, we may without much apprehension of error conclude that the affection is one of an organic character.

The physical phenomena presented in an exploration by auscultation and percussion afford, in *most* cases, presumptive evidence, while in fully developed organic affections they are clear and certain. Though the absence of physical symptoms in the early stage of organic disorders, does not indicate the absence of structural disease, yet the want of physical symptoms indicative of cardiac disorders, in *severe* cases of nervous affections of the heart, clearly determines the character of the disease in such cases. Having heretofore considered the physical symptoms connected with cardiac affections, I shall now take up the subject of

PALPITATION OF THE HEART.

This may consist in a "condition of the heart's movements," in which they may be sensibly and disagreeably felt to an inordinate degree, and are often perceptible at some distance from the patient. To constitute palpitation of the heart, irregularity in its action is not always a necessary attendant, but an increase in the force and frequency of its pulsations beyond the ordinary state, and occurring suddenly, may be considered a fair explanation of what is meant by the term, though irregularity in the contractions of the heart is generally attendant upon the disorder.

The disease is called idiopathic when produced by the increased arterial action which results from slight causes, when the cardiac nerves are in a state of exalted sensibility. It is styled sympathetic when produced by irritation reflected

head and other parts of the system. The pulsations may be irregular, beating one, two or three strokes with great force, and then intermitting; or they may be so rapid that they can scarcely be counted, and so feeble as to be nearly imperceptible; or they may be quick, jerking, and irregular, but not interrupted. The sounds peculiar to the heart's action are much increased, being often distinctly heard by patients themselves, especially when lying in a position favorable to the conveyance of its impulses. They can also be sometimes heard by other persons without immediate contact. In violent cases the sounds are of a rushing or whizzing kind, and in some instances the systole and diastole can both be heard. Occasionally the sounds produced by valvular disease will be distinctly heard, owing to the force of the heart's contraction; or we may recognize the bellows sound, which usually indicates endocarditis, but may be distinguished in this connection by the absence of other symptoms of inflammatory action. Few diseases are so insidious, and so sudden in their occurrence, as this; being often produced by the receipt of unexpected intelligence, and frequently appearing when there is no apparent cause, while the individual is at rest, and sometimes occurring in the night or after severe fatigue.

Causes. The most common causes of palpitation of the heart are nervous irritability; anemia or exsanguineous condition of the system, produced frequently by repeated venesection in the treatment of other diseases; venereal indulgences; the excessive use of stimulants, such as tea, coffee, tobacco, etc.; and also the habit of frequent drugging upon trivial occasions, especially with mercurial preparations.—Other predisposing causes which tend directly to produce impaired innervation may be mentioned, such as great anxiety, severe mental labor, and other excesses calculated to depress the vital energies. When the system is predisposed by the influences of these causes, any circumstance calculated to disturb its equanimity, or occasion violent and sudden emotions, will produce this disorder. Thus, sudden emotions of grief, joy, surprise, or fear, may act as exciting causes.

Palpitation of the heart is also a very common symptom in

other diseases, such as severe rheumatic gout and neuralgic affections, and protracted cases of indigestion; and is produced in a great measure by the uncontrollable nervous irritation generally attendant on such cases. But in many instances it results, no doubt, from irritation located in the great nervous centers, as the unique and extended sympathies often associated with this affection can scarcely be explained in any other way. It results also from reflected irritation located in other organs, especially of a chronic nature, such as hepatic disorders and protracted cases of intestinal irritation from worms or any other causes, and it frequently supervenes in protracted fevers, especially in aged persons. An impoverished and anemic condition of the blood is another cause of the difficulty, which is also apt to be a very troublesome one during the progress of pulmonary affections, being produced, in such cases, by direct sympathy in part, but mainly by embarrassment in the circulation of the lungs, and by the general debility and nervous derangement always connected with pulmonary disease. And, finally, palpitation of the heart is one of the most common symptoms of spinal irritation, and in fact is usually attendant upon many nervous affections wherever located.

Diagnosis. Very little needs to be added to what has been already said in regard to the diagnosis of this affection. For the characteristics of organic and functional diseases of the heart I refer to my former remarks. In regard to other distinctions I quote some remarks from Tweedie. "By percussion, auscultation, and inspection of the precordial region, we strive to ascertain whether there exists hypertrophy or dilatation of the heart, obstruction of the orifices, or imperfect action of the valves, or any of the results of pericardial inflammation; of the characteristic signs of each of which we shall afterward speak.

"In nervous palpitations, says Laennec, the sounds of the heart, though clear, are not loud over a great extent, and the impulse, though it appear strong at first, does not sensibly throw up the head of the observer. It was on this latter circumstance, taken in conjunction with the increased frequency

of the pulse, that he chiefly relied for their recognition. The extent of surface over which such palpitations are audible, is, however, sometimes much more considerable than his statement would prepare us to meet with, as they may at times be heard, not only over the whole chest, but even before the head is brought into close connexion with it. The shock of the heart, in cases of nervous excitement, has an "abrupt bounding character," and does not raise the head with the gradual heave of hypertrophy; and the pulse, though it may not be strong, or though it should even be decidedly small and weak, is again, to use the words of Dr. Hope, ordinarily 'sharp and jerking.' Both this character of pulse, and the bellows murmur which often coëxists with it, depend on the spasmodic quickness, and not on the force of the systole.

"In the intervals between the successive attacks of palpitation, when of nervous origin, the action of the heart and arteries is ordinarily natural; and the bellows murmur is of a less permanent character, and often affected by very slight causes, as by a change of posture, taking of food, a passing emotion, etc. Palpitations of this kind, too, are commonly much more distressing to the patient than is the over-action of the heart connected with organic disease, at least in its earlier stages. Of the latter there is sometimes a complete absence of consciousness; while the former, on the contrary are the source of perpetual complaint. This internal perception is indeed highly characteristic of nervous palpitation. The different effects of motion and rest on the two kinds of disease are also very conspicuous. Insufficient exercise, especially in combination with too high a scale of diet, when the subject is plethoric, is sure to exasperate the nervous variety; and it is in the recumbent posture, and during the attempts to procure repose in the earlier part of the night, that the annoyance from them is most marked; and they are least noticed when the individual is actively employed in the open air. In cases of organic affection, on the contrary, the least over-exertion leads to immediate exasperation of the symptoms, distressing dyspnea, etc., and the over-action of the heart is commonly more prolonged. The most obstinate

cise, and the careful avoidance of all exciting causes, will tend still further to clear up the nature of the case.”

Treatment. There is perhaps no disease in the treatment of which so wide a range of therapeutic measures is permissible as in palpitation of the heart. In one case a most strict antiphlogistic regimen and hydragogue cathartic are mainly to be relied on; while in another, the very opposite course—a generous diet, moderate tonics and restoratives—can alone be pursued with any prospect of permanent relief; thus illustrating the necessity, in this as in all other diseases, of first investigating and determining the *cause* of the disease. Nor is there any affection in which the distinction between the *palliative* and *radical* modes of treatment more obviously obtains; it being necessary in the same case to apply remedies for the immediate relief of present paroxysms, and use measures adapted to prevent a recurrence.

The remedies most naturally suggestive of relief in these sudden attacks are the nervine stimulants. The common sudorific tincture, heretofore described, combines properties calculated to fulfill the indications in such cases better than any other compound I have ever used. It is a powerful and diffusible stimulant, and at the same time rarely fails to calm the nervous system and subdue the irritation connected with it. It may be given in drachm doses, and repeated every hour and a half until relief is obtained. It will rarely be necessary to repeat more than once or twice. In the absence of this preparation, the compound tincture of camphor, or paregoric, may be given in the same way; or Hoffman’s anodyne may be used, though, apart from its stimulant properties, it can scarcely be called an anodyne. In some cases I have found the immediately exciting cause to be an overloaded state of the stomach, for which the most prompt relief was afforded by a boneset emetic, or the acetous tincture of sanguinaria and lobelia, given in tablespoonful doses, with boneset decoction.

The cases growing out of the excessive use of tea and coffee, or stimulating drinks, or the narcotic influences of tobacco, or excesses in eating, can be relieved only by regulating those

a weak and exhausted state of the system, and an anemic condition of the blood, as liberal a diet should be allowed as is compatible with the powers of digestion, and all those measures should be used which experience has shown to be best calculated to repair the circulating fluid, and thus restore the general health. The majority of such cases are unfortunately connected with more or less of gastric irritation, thus rendering strong food and stimulants quite inadmissible. But I have generally commenced by giving beef extract, prepared by boiling beefsteak cut into small pieces and put into an empty bottle, which is placed in a kettle of boiling water for a number of hours. This may be given in extreme cases in teaspoonful doses every two hours, and gradually increased, and as the patient's stomach improves may be changed for other nutritious articles. Soft cream toast, rice, farina, or rice boiled with chickens, and, if the patient gains, a small portion of rare beef, birds and stale bread, or roast potatoes, may be taken, and milk, if agreeable, may be allowed. Moderate tonics, such as ale and water in small quantities, and chalybeates, such as the muriated tincture of iron in soda water, two or three times a day, together with saline baths and moderate friction, are the leading measures to be relied on in such cases.

If the case is connected with neuralgic affections, quinine and iron, and afterwards the tincture of colchicum, in sufficient doses to act moderately upon the bowels, may be given two or three times a day. But if connected with spinal irritation, cups may be applied, or the compound tar plaster may be worn over the tender parts of the spine.

To enumerate all the indications which the various cases of this affection may present, and to consider all the influences that may contribute to its production, would be a tedious and probably an impracticable undertaking. But I will reiterate, what I have so often said, seek first to find the cause or causes of the disease, and constantly bear this in mind in the administration of remedies, and I shall have great confidence in your success.

liver, and people have been taught to believe that when it is diseased the only remedy is some mercurial preparation. The philosophy is simple and adequate to ordinary comprehension. The predicate being furnished, the practice easily follows. And thus this disease has been made a kind of "stool-pigeon" for the decoy of unsophisticated victims who have been thus philosophically persuaded to the deglutition of cart loads of poison. There is indeed, gentlemen, a lamentable amount of ignorance and error on this subject. Both the profession and the people need to be enlightened, and what little I can do to this end shall be cheerfully done, and according to the best of my ability, in this and a following lecture.

Diseases of the liver are divided into *acute* and *chronic*. I do not however apply the term "inflammation" to the chronic form. It is more accurately termed chronic *disease* of the liver.

The *acute* form is characterized by more distinct inflammatory symptoms, and is a very common disease, especially in the West and South, though comparatively rare at the North. One reason of this diversity in its prevalence is, that in the West and South the stimulating effects of mercury on the liver are carried to a much greater extent than at the North, and another reason is found in the more serious effects which southern and western diseases produce directly upon the general system and secondarily upon that viscus. This disease has often been found to be the result of mercurial treatment for other diseases, and of course was far more common when mercurial remedies were more universally resorted to. On the contrary we rarely ever see it follow our course of treatment.

Acute hepatitis is sometimes *associated* with the diseases of our western country, and then results, as I suppose, from the relaxing influence of a long continued high range of heat, aided no doubt by indirect malarial influence, upon the biliary organs. It usually commences with a slight chill, followed by a stage of reaction, developing all the phenomena of inflammation. There is more or less difficulty of breath-

bile. This is a diagnostic symptom, and should not be overlooked, for inflammation of the liver is liable to be mistaken for other diseases, such as pleurisy, pneumonia, etc., and a mistake of this sort might lead to an erroneous course of treatment. The pulse is usually frequent and full, though not of that rapid character we find in general peritoneal inflammation. If the peritoneal covering of the liver is more especially involved the pulse is more frequent. Owing to the intimate sympathy between the liver and the lungs and bronchial tubes, a dry hacking cough will usually accompany the disease, especially if the upper portion of the liver is inflamed. When the biliary secretion is not discharged in the form of diarrhea, yellowness of the eyes and of the skin, especially about the neck and breast, will constitute a permanent diagnostic symptom. A peculiar symptom, in all forms of this disease, is the great lowness of spirits with a peculiarly depressed condition of the nervous energies, affecting the moral and intellectual faculties so that the individual becomes morose and unsociable. This symptom has been universally observed.

I have already spoken of its *association with periodical fevers*, and will only add that a large majority of cases occur under circumstances peculiarly favorable to the development of these fevers, usually in the fall or early part of the spring. You will often find the febrile the paramount symptoms, and when they are removed the inflammatory symptoms will usually subside. There is no disease, perhaps, in which the skin presents a more harsh and husky condition than affections of the liver. The tongue is usually thickly coated, and the mouth has a disagreeable, bitter taste. If the stomach is involved, the tongue will have a red appearance on the tip and edges, and if there is much congestion of the liver, the tongue will be very dry and husky.

Pain in the shoulder has been considered a diagnostic symptom, but it is liable to be confounded with rheumatism or neuralgia,—for sometimes *disease* of the liver presents neuralgic symptoms that may be mistaken for *inflammation* of that organ. But the soreness in the hypochondriac region

ease, and be very likely to take the patient off. It may also be discharged in various other directions. Thus the abscess may either communicate with the gall bladder, and the pus, mixing with the bile, be discharged into the duodenum, or the inflammation may form adhesions between the liver and intestines, and the abscess point into the colon, and thus be discharged in the stools, or it may open *directly* into the duodenum and pass off into the intestinal tube. Adhesions may also be formed, during the inflammatory process, between the diaphragm and the liver, and thus communicate with the lungs, and the matter be thrown up by expectoration. The pus from the liver will be recognized by its dark-brown and greenish appearance, while that which comes from other parts is of a greenish yellow color.

When the inflammation has been confined to the investing membrane, the upper surface of the liver will exhibit greater vascularity than natural, and will appear somewhat swollen and partially covered with exudations of coagulable lymph, often so inspissated and organized as to partially unite with the opposite surfaces of the peritoneal membrane, and sometimes forming permanent and extensive adhesions. When the substance of the liver has been the principal seat of inflammation, its vascular structure will be highly engorged, and may appear, when cut into, somewhat like coagulated blood, dark and friable, and when torn still dark and bloody, but more granulated. In such cases, the whole viscus is usually greatly enlarged, and exhibits a variety of appearances on its surface. You will see at the same time spots of a black, dark-brown, and red color, shading off into a light or pale appearance.

In the advanced stages, and more especially in the chronic form of this disease, induration and enlargement will often be found, though I have seen, in connection with the indurated condition, great diminution in size. In the acute form, a more frequent change will be a softening of structure, in some cases to the extent of producing a pulpy and inorganic mass.

The peculiar structure of the liver renders it liable in the

tional conditions and predispositions, so that the same proximate cause will develop in one person disease of the lungs, in another disease of the liver, and in a third derangement of the bowels.

But perhaps the most common source of this disease is the mercurial treatment so generally pursued in times past for the cure of other diseases and especially of bilious fever. I can produce an abundance of evidence upon this point, as you will find by reference to almost any of the authorities. I will quote a paragraph from the liberal and practical work of Dr. Tweedie. Vol. iv, p. 240, he says:

“It is a well established fact, that mercury, administered as a remedy, occasionally causes hepatic disease, which presents itself sometimes under the distinct character of hepatitis, and sometimes under the more obscure garb of jaundice. The first notice of this operation of mercury with which we have met, is contained in a letter by Dr. Sherwen, dated from the Ganges, in September, 1770. Dr. S.’s experience of this action of mercury was confined to a single case. Dr. Dick, who practised long in Calcutta, states in a letter to Dr. Saunders, that he has often observed chronic liver attacks succeed to long courses of mercury, undergone for the cure of venereal complaints. Dr. Cheyne, in the space of two years, met with three cases of jaundice produced by mercurials; and he had been creditably informed of its appearing in large venereal establishments during the exhibition of mercury. (*Dub. Hosp. Rep.*) Dr. Nicholl, when serving in India with the 80th regiment, occasionally observed hepatitis come on a few days, but often weeks, after a mercurial course for a venereal complaint; a great proportion of the soldiers who had been treated in this manner for syphilis suffered from inflammation of the liver; and in eight instances the same effect was produced by the exhibition of mercury, administered for the cure of chronic ophthalmia. Dr. Chapman, of Philadelphia, relates cases of a similar description, and ascribes the prevalence of hepatic complaints in his neighborhood to the employment of mercury in the cure of autumnal fevers; he also states, on the authority of some old prac-

ease are curable only by a course of constitutional mercurial medication. The whole profession, and the world at large, are familiar with the fact that cases often occurred in which it was found impossible to induce mercurial action. Such cases were generally considered incurable, and were therefore abandoned; and yet, in spite of the previous enervating treatment, recoveries occasionally happened. And it does seem that such exceptions might have suggested the grave inquiry whether *all* cases would not have done better without mercurial action?—as it is very certain its deleterious consequences would have been avoided, and thus the system have been left in a better condition for the operation of its recuperative energies. The true answer to that inquiry cannot be unknown to any one who has made fair trial of the treatment which I have heretofore recommended, and which has never been known to substitute a worse disease than the original in its place, nor entail upon patients chronic derangements or melancholy deformities.

The *use of stimulants* is a prolific source of disease of the liver. The direct sympathy between the stomach and liver is well known, and post mortem examinations of inebriates have discovered hepatic diseases in various forms.

Another cause of the very frequent occurrence of acute and other hepatic affections—and one which should never be overlooked—is to be found in the peculiar arrangement of the circulatory vessels of this viscus, which differ in many respects from other secretory organs, and especially in having a much larger amount of blood constantly passing through them. All the venous blood returning from the other chylipoietic viscera, as well as the arterial blood sent directly to the liver, flows through that organ.

Prognosis. With prompt and appropriate treatment acute hepatitis will rarely terminate unfavorably. But with inefficient or bad treatment it might in many cases speedily prove fatal. In the progress of the disease, a great degree of restlessness with cold extremities, a rapid pulse and suppression of urine, are ominous of unfavorable results; while a more quiet state of the system, a pulse diminished in frequency,

operations. I have no doubt that this effect is produced chiefly by the blood-root, for if it has any specific action it is upon the liver.

The effects of an emetic being realized, the next indication is to remove any accumulations that may exist in the bowels by a cathartic. It is important, in this disease, to select a remedy which will be of a decidedly depurative character, and which will not only remove the accumulations of the stomach and bowels, but relieve the system from other embarrassing elements. If podophyllum has not been given in the first instance, with a view to its emeto-cathartic action, it should be administered in combination with the antibilious physic. But if any circumstances, local or otherwise, seem to render the antibilious physic objectionable, you may use, instead of this combination, podophyllin and leptandrin, one grain of the former to two of the latter, repeated every two hours, until free bilious evacuations are procured. This remedy will rarely disappoint you, and there is no means so apt to relieve the liver from inflammation and restore its natural secretions, and thus disengage its vessels.

In some cases there is a tendency to gastro-intestinal irritation, and then it will not answer to continue the cathartic, or at least it should be given in very small doses. Or, if the liver is acting under the influence of the first dose, it will not be necessary to repeat it.

Local applications will generally be useful, and in severe cases indispensable. Sinapisms to the back and abdomen, followed by hot fomentations, will usually be sufficient. They divert the inflammatory action from the inflamed organ, and assist in equalizing the circulation. But in violent and rapid cases, in which you cannot rely upon counter-irritation, the application of a number of large cups over the right hypochondriac region, with extensive scarification, will give immediate and more or less perfect relief. You will also gain time to persevere with the other curative remedies. It is true that the direct sympathy between the liver and the adjacent vessels will be such that very little blood can be extracted; yet the revulsive influence of the cups will be exerted

gogue aperients, such as the compound taraxactm pill, so often heretofore mentioned, should be given in smaller doses than usual in other diseases. But if the patient is not essentially relieved, the emetic and cathartic—one or both, as the case may be—should be repeated and followed by the sweat.

In those cases associated with miasmatic influences the first indication, as in other forms of local disease associated with periodical qualities, is to administer the anti-periodic remedies. I hope, gentlemen, you will not think that I have an undue partiality for these remedies, or that I would recommend them with so much confidence had not long experience taught me their superiority to other means. As to their efficacy, I appeal to the testimony of those members of the class who practiced last season, and tested the truth of the doctrines that I have endeavored so earnestly to impress on your minds. If, on being called to a case, you find derangement of the stomach, accumulations present, and an exacerbation of fever, premising an emetic will prepare the way for the appropriate influence of other remedies upon the system. But if called at the proper time for administering the anti-periodics, I would not wait for the action of an emetic, for it is not safe to give the disease time to become fixed, and time is of the utmost importance in these cases. But if called during the stage of reaction, I would not give the anti-periodics until, by the use of the ordinary palliatives, evidences of a remission began to appear. And even if an emetic was needed, I should prefer to wait until the latter stage of the exacerbation before giving it, for if you attempt its administration while the system is excited and the stomach irritated, it will not seem to have the desired effect, and this condition of the patient should be taken into consideration. But you may administer a cholagogue aperient which will produce a mild impression, and in this way gain time. Of course, in addition to this, you should resort to other means of a palliative character. Bathe the surface all over with broke water and whisky until the febrile symptoms begin to decline. Then come in with the anti-periodic treatment, and persevere with it until the return of the exacerbation. I have often seen the gravest

LECTURE LV.

CHRONIC HEPATIC DISEASE.

Symptoms, local and constitutional — Causes — Diagnosis — Prognosis — Anatomy — Treatment — Modified by complications — Other morbid conditions noticed.

BILIARY CALCULI—GALL STONES.

Definition — Concretions described — Chemical composition — Various forms according to Vogel — Their development — Effect on the system — Treatment — 1st, Present relief — 2d, Change of diathesis.

We come now to consider *chronic disease* of the liver. Generally speaking positive *torpor* of the organ is connected with this form of disease, though sometimes it is accompanied with *excessive secretion* of bile. It is most commonly the sequel of the acute form badly treated. But I have never seen a case supervene upon the course of treatment I have recommended for that form, though I do not say that such will never be the case. Whether it is the result of the acute form, of irregular habits of life, or of mercurial impressions, the patient may not be suspicious of its existence until it is fully fastened upon him. We find it existing in every imaginable grade, from slight torpor to total inaction, and from a contracted condition to a slight increase in size, and so on to the greatest conceivable extent of enlargement. I have seen the liver occupy the whole anterior portion of the abdomen, reaching down to the pubes and occupying both iliac regions. It is not, however, often found enlarged to this extent, but is usually somewhat increased. Ordinarily it cannot be felt below the short ribs, but if recognized there it

malaria is unknown and mercury is more moderately used than at the South and West.

The *diagnostic* symptoms are marked and scarcely need to be repeated. Pain in the side accompanied with a degree of tenderness, and usually a perceptible enlargement, more or less pain in one or the other shoulder and under the shoulder blade, coldness of the extremities, a harsh, dry skin, and depression of spirits, all indicate more or less disease of the liver, and are so characteristic that few can be misled.

Prognosis. Under the old system of treatment, when mercury, in some one of its various preparations, was supposed to be the only remedy that ought to be prescribed in chronic diseases of the liver, it became the reproach of the profession—the justice of which was acknowledged even by many of its members—that very few cases were benefited and still fewer permanently cured. Under that sort of medication patients would be temporarily relieved and then get worse, and so continue from better to worse until, finally, a pulmonary disease or hopeless consumption was developed, and the patient hurried to a premature grave. A very respectable old school physician once said to me that, if he desired to preserve his reputation in the treatment of chronic hepatic affections, he would prefer to be so situated that he could not see his patient oftener than once in two or three weeks. Then, as long as the medicine lasted—and the quantity left could be nicely calculated—the patient would think, under its favorable impression, that he was doing very well. The medicine being used up and its effects passing away, the patient would in a few days become discouraged and again send for the doctor. The same course would be repeated and with similar results, and thus go on until the case became hopeless—the patient and his friends all the time deploring his distance from the doctor, and the doctor having the benefit of the supposition that the result *might* have been different under other circumstances; whereas, if he were so situated that the patient could be seen every day, or oftener if desired, the result would be the same, while no apology could be offered but inability to cure.

on the liver by giving the compound taraxacum pill, say in the proportion of ten grains of podophyllin, twenty grains each of leptandrin and sanguinaria, and *quantum suff.* of taraxacum to form twenty pills. Give one pill twice a day, or, if they should act too powerfully, restrict to one a day, in the evening. This remedy tends to act specifically on the organ, and to eliminate from the system that stale matter which is so embarrassing to the healthy functions of the different organs. Persevere with these and the occasional use of more active means. The surface should always be attended to. The patient should be bathed all over every night, followed with brisk friction, until a glowing reaction on the surface is secured. If he is not too much debilitated, a cold shower bath every morning will be very beneficial in giving tone and energy to the whole system. If you find that the liver is decidedly inflamed, the application of cups, followed by the irritating plaster, will produce good results. In those cases of enormous chronic enlargement, to which I have referred, I have realized excellent effects from a caustic issue in the side. This should, if necessary, be continued for months. But usually the cups and irritating plaster will be sufficient.

As a modification of treatment in cases where indigestion is a prominent symptom, and where there is not arterial excitement, our common Bone's bitters is a valuable remedy. A small portion of podophyllin should be added, and by this remedy you will fulfill all the indications of the disease. The podophyllin acts on the biliary secretions, and the aloes contained in the bitters acts on the lower portion of the bowels, while at the same time you have excellent tonic properties to arouse the digestive functions. It is also diaphoretic, determining to the surface, and an excellent diuretic, eliminating a great amount of effete matter from the circulation through the medium of the kidneys. In cases of indigestion I cannot fail to recommend this preparation with particular emphasis. If, however, the bitters cannot be borne, a very excellent tonic will be found in a decoction of wild cherry bark and staphylea, taken in fluid-ounce doses three times a day. This prescription will be found particularly applicable after the

nized in the progress of the morbid modifications referred to. So also what has been said on the functional disturbances of this organ as associated with fevers, diarrheas and dysentery, and especially the incidental consideration of its functional disorders, in discussing the subject of jaundice, will comprehend all, as I conceive, that can be profitably said on this branch of medical science.

I have not, however, treated in a practical way the subject of biliary calculi, and, as there are some practical points connected with the subject, I will detain you for a short time in the consideration of

BILIARY CALCULI OR GALL STONES.

These terms are applied to concretions precipitated from bile. They may be found in any part of the biliary apparatus, but most generally in the gall bladder, and occasionally in the cystic duct or choledochus ; and when thus found are apt to produce severe pain, often resulting in inflammation of the duct. They are also liable to form in other parts of this viscus, such as the hepatic duct and the bile tubes or *tubuli biliferi*, and are sometimes precipitated from the bile after it has passed into the bowels.

These concretions exhibit great difference both in their physical properties and their chemical composition. In their physical form they vary from the size of small grains—visible only by the microscope—to that of a mass large enough to obstruct the bowels by filling the cavity. Dr. Wood says he “has seen them fill the cavity of the bowel and moulded exactly into its shape.” It is said a number of them sometimes become agglutinated and thus form into a “large mass in the bowels and produce ileus by obstructing the passage.” They differ considerably in color, but more in size. They are generally of a yellowish-brown color, and of a moderately soft consistence ; varying in shape, but generally irregular, with angles more or less obtuse. There is another kind, of different chemical proportions, composed of crystallized carbonate of lime, having pointed and rough edges, and pro-

ducing exquisite suffering in their passage from the gall bladder to the bowels. These are of much lighter color and greater specific gravity, and of more rare occurrence than others. The former present more the appearance of the mulberry urinary calculi. In some cases the concretion seems to be little more than inspissated bile, having, when occurring singly, a rounded shape, but, when a number of them are pressed together, assuming a many-sided form dependent somewhat on the number thus pressed together. Inspissated bile and mucus, colored by the bile pigment, often form the nucleus around which the more common elements of these concretions collect.

The chemical composition of hepatic concretions differs in many instances, depending, of course, on the character of the formations. They are generally made up of the following constituents, viz :

1. Cholesterin, arranged in layers of rhombic or irregular shape, and easily separated by heated alcohol.
2. Bile pigment, having a light or brownish-red color, and in some instances a dark-brown color.
3. Choleic acid and choleate of soda—principles that are found in the bile.
4. Mucus.
5. Earthy salts, especially carbonate of lime.
6. Margarin and its compounds.

These are the principal constituents of gall stones, though it should be remarked that they are seldom all found in the composition of one stone. Cholesterin is the leading substance usually found. According to the arrangement of Vogel the following are the principal *forms* of biliary concretions : (*Vogel*, p. 337.)

“ 1. Fine precipitate of bile pigment and crystallized cholesterin, imbedded in mucus, mixed with epithelium whose cells are sometimes incrustrated.

“ 2. Biliary gravel—minute concretions of the size of a hempseed or grain of sand; occasionally many such concretions are united by mucus so as to form a large mulberry shaped calculus.

“ 3. Soft biliary concretions, which in a recent state readily admit of being moulded between the fingers, consisting of crystalline depositions of cholesterin, between which there is bile pigment.

“ 4. Crystalline calculi consisting for the most part of cholesterin, nearly colorless, transparent, with a crystalline, fibrous fracture, granular on the surface, and usually covered with minute crystals of cholesterin.

“ 5. Dark calculi of a reddish brown color, and earthy fracture which does not become bright by friction. These consist for the most part of bile pigment.

“ There is a variety of this species, which is of a dark-brown almost black color, and exhibits a red, mulberry-like appearance. These calculi seem to consist of a peculiar modification of bile pigment.

“ 6. Calculi consisting for the most part of carbonate of lime; they are crystalline, with rough surfaces terminating in sharp angles, of a clear or sometimes rather brown color.

“ 7. Gall stones of whitish color, saponaceous feeling, and concentric laminated arrangement, which on scraping assume a polished appearance, and consist for the most part of cholesterin.

“ 8. Gall stones consisting of alternate white layers of cholesterin and dark yellow layers of bile pigment.

“ The two last kinds are by far the most common.”

It might be interesting to investigate how these biliary concretions are *developed*. Without, however, entering into a minute consideration of this subject, I will remark that their formation is no doubt dependent upon the same principle which governs other concretions; that a nucleus is first necessary, and then a gradual accumulation takes place upon its surface. The nucleus is started by chemical changes in the biliary secretions, resulting in a precipitate, which, not being discharged in the bile, forms into a mass, and gathers accretions from the same condition of the bile. It is supposed that to form this precipitate the bile must be somewhat inspissated by being retained longer than is usual, and then, by a process of endosmosis, the more fluid portions are disposed of, and

first, to relieve the spasmodic action of the duct, and thereby induce relaxation and allow the concretion to pass away; and *secondly*, to change that diathesis of the system which appears favorable to the formation of the concretions. The first indication will generally be effectually fulfilled by giving full doses—say two drachms—of our common sudorific tincture, repeated every hour and a half if relief is not immediately obtained. The application of a sinapism extending over the stomach and liver, followed with hot hop fomentations, or if inflammatory action has been developed, the application of a few cups with scarification, followed as usual with hot fomentations, will be likely to afford relief. It will be important also to administer a cathartic, and one that will produce its action speedily and freely. For this purpose, if the stomach will tolerate it, as it usually will, the common antibilious physic with cream of tartar will answer a better purpose than any remedy of the kind I have ever given. If, however, the stomach is irritable and medicine is retained with great difficulty, small doses—say a teaspoonful at a time—of a decoction of the compound neutralizing physic should be given, and repeated every hour till the stomach is quieted, and then it may be given in larger doses till it operates on the bowels. If derangement of the stomach exists, as indicated by a furred tongue, a free emetic will be a very necessary part of the treatment. The infusion of lobelia and boneset, administered until full and free emesis is procured, will not only give relief by removing morbid accumulations in the stomach, but the powerfully relaxing influence of lobelia upon the whole system, and consequently upon the spasm of the duct, affords an additional reason for the administration of the emetic, and especially this particular kind.

The *diathesis of system* favorable, and in fact believed to be generally indispensable, to the formation of gall stones, is a predominance of acids, associated generally with irritability of the nervous system. To obviate this difficulty, I know of no remedy more efficient and reliable, and none that may be given for a longer time without detriment to the digestive organs, than the compound neutralizing cordial, with the

addition of an equal part of wild cherry bark. Combining as this preparation does, a mild but efficient and valuable alkali with good tonic and aperient properties, few remedies will be more readily taken, and none will be more generally borne. The following formula may be employed:

R. Rad. Rhei,
Fol. Mentha pip't,
Cinnamomum,
Sup. carb. potass.,
Prunus Virg. aa ʒss pulv. m.

Decoct in water one qt., strain, and add brandy half a gill.

This should be given in stemglassful doses three times a day; but more or less as may be necessary to produce its aperient effects on the bowels. In nearly all chronic affections the skin will be found performing its functions imperfectly. It is therefore important in all such cases not to overlook those appliances calculated to excite healthy action in this great emunctory. The shower or sponge bath in the morning, followed as usual with friction, or if they are not convenient or can not be borne, the warm alkali and whisky bath at night should never be neglected. Exercise in the open air to the extent the system can bear should always be prescribed. The diet should be liberal but not extravagant, avoiding greasy and high-seasoned food, and those articles which readily enter into fermentation, such as succulent vegetables, pastries, hot bread, and the like.

LECTURE LVI.

JAUNDICE.

Not a generic disease — Symptoms described generally — Bile pigment in healthy blood — Characteristic symptoms — Constitutional disturbance — Course variable — Post mortem — Causes — Treatment — Leading indications — Jaundice in young children.

I propose in the present lecture to discuss that disease of the liver known as *Jaundice*. It is not a *generic* disease and would not perhaps properly come in at the present time, according to the general arrangement which I have adopted. But as it will probably be more fully understood or appreciated by being considered in close connection with other derangements of the liver, I have thought it best to take up the subject in this place.

We find the *symptoms* of jaundice frequently occurring in some way associated with organic disease of the liver, or in connection with disturbance of its proper functional character. Having no generic character, it will be recognized chiefly by a congeries of symptoms. You will detect it by the appearance of the eyes, the skin, and generally, though not always, by the character of the stools. It is a well determined scientific truth that the coloring matter of bile is also a constituent element of the blood. It follows therefore that the general symptoms of jaundice may exist without any special derangement of the functions of the liver; and cases are occasionally met with in which the liver performs its functions with ordinary activity, as indicated by the character of the stools, while the appearance of the eyes, skin

tioners must occasionally have noticed. I have also witnessed the same phenomena in certain forms of fever where the discharges showed a copious bilious secretion, while the skin and eyes exhibited the yellow pigment to a great degree. The accumulation of bile pigment is most usually dependent on torpidity of the liver, in which case it is not secreted, but is retained in the system, to seek other channels through which to be eliminated. Hence we find it deposited in the skin under the cuticle, in the urine and often throughout the cellular structure of the whole system, even in the bones and other solid structures.

There is another doctrine that has obtained, and may have some truth in it. It is, that this formation is dependent, not so much on torpor of the liver, as on the *inability of the outlets* of this organ to discharge it, and therefore, that the bile is secreted and subsequently absorbed into the circulation. It is contended that while the pigment existed free in the blood, and not combined as in the secretion, it could not exhibit the symptoms that are observed. Now this would be a plausible theory, had it not been shown that coloring matter, in a free state, exists in the blood. But since that has been satisfactorily determined, we are forced to the conclusion that, at least in most instances, this matter is not secreted by the liver, but is retained in the circulation on account of torpidity of that organ. There is another weighty objection to that doctrine. Secreting surfaces rarely perform the function of absorption. There is a certain set of vessels specially appropriated to the function of secretion in which absorbents do not exist. This is generally the case, and affords in the main a very conclusive argument. But we know that organs sometimes take on a vicarious action, and perform the office of others that become impaired or decayed. And it is not impossible to suppose that the vessels which secrete the bile may take on this vicarious action for the purpose of relieving the distended reservoirs of bile, when the usual outlets are obstructed. This, however, will only be the case to a small extent, and not sufficient to afford the necessary relief. And it further seems to be specially contra-

dicted by the fact that when the liver is stimulated to action, the symptoms are relieved, while, if the bile had been retained in the gall-bladder, it would of necessity exhibit a far more vitiated character.

The *functions* of the liver may be disturbed for a time *without developing jaundice*. This we frequently see in some cases of fever. But it is supposed that, in such cases, either the elements of which bile is composed are not furnished in the usual quantities, or else they are carried off by the vicarious action of other organs, and the symptoms tend to show this to be the case. Jaundice, however, is often an attendant on other diseases which cause a deficiency in the secretion. Thus we frequently find it in connection with gastro-intestinal irritation. It may depend entirely on duodenal inflammation, and is one of the most common effects of that local difficulty. It is also frequently connected with mere torpor or atony of the organs concerned in digestion, and all that is required to remove it is to stimulate those organs into full activity.

The *symptoms* that make up what is called jaundice can scarcely be mistaken. *Yellowness* is the predominant peculiarity. The color of the skin varies from a slight yellow to a dark brown. Whether the difference in color arises from the quality of the bile, or the quantity in the capillary vessels and cellular membrane, is a question of some interest. I suppose it is owing more especially to the amount. We see the same individual exhibiting a striking difference in his appearance at different stages of the disorder. At first the eyes may be decidedly yellow, and as the disease progresses and the elements accumulate, both skin and eyes become very dark, and in some instances a partially green tinge is given to the skin. I have also seen persons of a dark skin and bilious temperament turn almost as dark as a mulatto. These cases have been called the *green* or *black jaundice*. The *urine* exhibits the same variation in color, and in this we can better demonstrate the cause of that variation. At first the urine is of a bright saffron color, but, as the bile pigment accumulates, in the progress of the disease, it resem-

bles in color a strong decoction of coffee. In that state, by dilution in water it gradually assumes the bright saffron hue of the early stage. This is decisive proof that the variation in color depends on the quantity of coloring matter in the system. The *stools* are usually deficient in bilious matter, as shown by their resemblance in color to ashes or clay. In children they are more apt to be of a clay color, but in adults they are mostly gray or ash-colored. In rare and exceptional cases they are decidedly brown. Another striking peculiarity of the evacuations from the bowels is the great amount or size of them, in some instances quadrupling the ordinary quantity. I do not recollect to have noticed any mention of this symptom in the books, but I have uniformly observed its existence in all the cases I have seen, and it is owing to the fact that the food is not changed by the bile and there is consequently no absorption of it.

There is little *constitutional disturbance* in this disease. Fever is rarely present, unless jaundice is associated with some form of inflammation. The skin is husky, dry, and harsh to the feel, though not hot. The stomach sympathizes with the condition of the liver, insomuch that the healthy action of the one depends upon the other. One cannot be involved without affecting the other. In inflammation of the liver the stomach becomes irritable, and in torpor of the former the latter also becomes torpid, and indigestion is the consequence. Whether indigestion depends on atony or on irritation matters but little; we usually find one of these present. In cases of more positive irritation we often find nausea and vomiting, and then the symptoms of constitutional disturbance are more evident. The liver will be inflamed and so enlarged as to be felt by the hand under the short ribs. The tongue is usually furred, and a bad taste in the mouth is a striking symptom. Constipation is a common attendant; the biliary secretion, which is the natural purgative of the bowels, and brings into action the muscular coat of the alimentary canal, being locked up, torpor of the bowels naturally follows. There is another symptom, the existence of which some of the authorities seem to question, but which I think

might naturally be expected in some cases, and can be accounted for on philosophical principles. I allude to the yellowish tinge which patients complain of seeing on all external objects. Now every one knows that colored glasses worn over the eyes will give every thing the same hue, and this symptom is produced in the same way. The external membrane of the eye becomes charged with the yellow coloring matter of the bile, and this produces the same effect that yellow glasses would. All the secretions are sometimes tinged more or less with the coloring matter of the bile, and it is probable that its other proximate principles would be discovered equally present in a free state in the secretions. The perspiration will frequently exhibit this change by the color imparted to the clothes next to the body, or by rubbing the skin with a moist towel. Jaundice may be associated with common bilious fever, and in this case gastro-intestinal irritation is usually present, but will generally subside when the fever is arrested.

The course of this affection varies in its natural progress, and is greatly influenced by the treatment. In some instances it appears suddenly, continues for a short time, and then disappears. Again, it comes on very gradually, making its approaches with few unequivocal symptoms, until the skin and eyes unmistakably indicate its presence. Slight changes in the general appearance and modifications of the general symptoms may be observed in the course of the disease, but the most unequivocal evidence of a *favorable* change will be the change of the color of the alvine discharges to a partial or complete yellow tinge, and of the urine and skin from a dark or yellow appearance to a more light and natural state. An itching of the surface often associated with slight anomalous eruptions will frequently be observed, and are favorable indications. Jaundice rarely proves fatal, and I have never, in my own practice, seen a single fatal case. When it does prove fatal, it would no doubt be found associated with symptoms of organic affections of the liver, though it might be connected with disease of the brain. The excessive accumulation of the morbid elements of the bile, when retained in

the circulation, would readily produce effects upon the brain not unlike those resulting from a highly carbonaceous condition of the blood. And indeed you will remember that carbon is a predominating element of bile.

A disease proving so rarely fatal cannot, of course, be expected to afford many opportunities for *post mortem examinations*. Almost every condition of the liver has been detected in the cases that have been examined, but not growing exclusively out of the character of jaundice, nor necessarily connected with it. The proper anatomical phenomena will be found to be the color imparted to both the solid and fluid portions of the system. The brain is said to be more rarely affected in this way than other substances of the body, while the adipose structure exhibits it most sensibly.

Jaundice may be *caused* by anything that will bring about inactivity of the liver, and hence we find it often produced suddenly. It may result from sudden fright, and often no doubt comes from great mental anxiety. One writer mentions a student whose anxiety to pass the ordeal of a final examination was so great that a positive case of jaundice grew out of it. The "green-eyed jealousy" of the poet illustrates the same effect. Generally, however, the disease comes on gradually, and may be produced by any influence which operates directly or sympathetically upon the liver, and causes inactivity in its secretory functions. It often follows long continued and excessive action of that organ. Hence the use of mercury is one of the most common causes of this disorder. I have a number of cases that I could refer to this cause in some form or other.

Treatment. There is not among the old school practitioners that uniformity of sentiment in regard to the use of mercury in this affection which prevails in respect to other diseases. While we find among many of the best authorities the use of that remedy denounced and reprobated, there are others who speak of it as the *sine qua non* in jaundice, and while some practitioners attribute their failure to cure to the obstinacy of the disease, others are willing to ascribe their ill success to the irritating effects of the remedy. I have rarely found any

difficulty in speedily arresting the disease by other remedies, a fact the statement of which drew forth an expression of surprise and skepticism from an old school physician. But when he came to see the success of those remedies in actual practice, he had the candor to acknowledge their vast superiority to calomel. I can easily conceive when mercury might be taken with benefit, and I am not disposed to deny that it does act on the liver, and excite the glandular system, as shown by its influence on the secretions of those organs. But it does not follow that other remedies may not have an equally good and even better effect, and at the same time be safer and more reliable.

The two *leading indications* in the treatment of jaundice are presented in the condition of the organs involved, and the cause of the disease. If you do not first look to these you will be working in the dark, and in all probability will do your patient more harm than good. When there is torpor of the liver and no evidence of irritation of the stomach, a free operation of podophyllum is the first indication, which will be fulfilled by giving it in doses of from ten to fifteen grains. If its emeto-cathartic action is not obtained in three or four hours it should be repeated with the addition of four grains of ipecacuanha, or as a substitute you may give two grains of podophyllin and four of ipecacuanha, which should be repeated in three or four hours if necessary. This will usually be all the active treatment which the case will require. But if the case should prove more obstinate than ordinary, it may be advisable to repeat the same active measures in a week or so. And for the purpose of keeping up a mild action of the liver and bowels, a pill composed of podophyllin, leptandrin, and extract of taraxacum, may be given every night and morning. I have also usually administered at the same time tablespoonful doses, two or three times a day, of a decoction of wild cherry bark and sanguinaria, which, in cases connected with debility of the stomach, will rarely fail to produce highly beneficial effects, and should be continued for some time after the healthy secretion of the liver has been restored. Its action upon the biliary secretion obviates the

necessity for constantly resorting to cathartics, and it should never be neglected except in those cases presenting evidence of gastric irritation, when the blood-root should be omitted and the cherry bark be given alone. Attention to the skin is of the utmost importance. Frequent and thorough bathing not only induces a genial equilibrium in the circulation, but excites a natural and free perspiration, and thus overcomes that obstinate torpor of the skin which exists in jaundice. Let the patient, before going to bed, be bathed over the whole surface in a solution of carbonate of potassium and whisky, followed by brisk friction with a coarse towel.

But when the disease is connected with irritation of the stomach and duodenum, as indicated by a high-colored tongue, frequency of the pulse, and tenderness upon pressure, it will not answer to pursue the *active* course of treatment which I have prescribed. In such cases your main reliance will be attention to the skin, abstinence from indigestible food, and a free use of a decoction of taraxacum and staphylea. The latter operates in giving tone to the stomach and allaying irritation. If the tenderness is extreme, much benefit will be derived from counter-irritation, sinapisms, fomentations, etc. If the disease is dependent upon local irritation, when that is removed the liver, beginning again to perform its healthy functions, will pour out its bile into the alimentary canal, and perhaps, owing to the stimulating purgative effects of the bile, a slight diarrhoea may follow. But this should not be interfered with, unless it runs to great excess. If the disease is connected with inflammation of the liver, the remedies that were recommended for the treatment of that disease should be administered. If it is connected with mere torpor of the liver and inactivity of the digestive organs, without irritation of the stomach and bowels, after having rallied the organs involved effectively by the emeto-cathartic action of the podophyllum, or if that thorough measure is not advisable, by the cholagogue pill, you may follow with our common bitters, adding a small portion of podophyllum, giving sufficient doses to secure one or two healthy evacuations daily, or, if preferred, the podophyllum may be omitted, and

the patient may take one of the pills every night. You can administer this course with the confident assurance of giving relief.

That form of jaundice that occurs in *young children* usually passes off very soon. It is only necessary to clear the bowels of the meconium. This can be accomplished with any mild purgative, such as sweet oil.

There are various other remedies recommended for this affection both in the books and in domestic practice, which I have not deemed necessary to notice particularly; chiefly because I have thus far had the good fortune to have met with no case that has not promptly yielded to the course of medication I have just described. I will, however, remark that many of the old school members of the profession hold the nitro-muriatic acid in higher estimation than any other remedy for jaundice, not even excepting mercury. It is used externally and internally in appropriate doses. The nitric acid alone, used in the same way, has been highly recommended by many European practitioners, and especially by Sir James McGrigor in his medical sketches in India. In domestic practice, a decoction of the barberry (*berberis canadensis*) has a high reputation in some sections of the country. Horseradish is also often used, but with what success I am not prepared to say.

The *diet*, in cases unconnected with gastro-intestinal irritation or inflammatory action of the liver, should be plain but nutritious, such as a small amount of animal food, good bread, potatoes, and the like. But in cases connected with irritation, only the most simple, mild, and farinaceous food should be allowed. Active exercise should be taken when there is not much excitement from fever, but when there is fever and irritation the patient should keep quiet.

LECTURE LVII.

MERCURY.

Reference to past — Reasons for discarding — Has done more harm than good — Respectable professional opinions quoted — Dr. Dixon — Its use in hepatic and venereal affections — Quotations from Dr. I. Hays — Quotations from M. Desruelles.

Until within a comparatively recent period, as you very well know, the belief was almost universal that mercury, in some of its preparations, was absolutely necessary in the treatment of hepatic affections. Whether the disease of the liver was organic or functional, it was equally considered an indispensable specific. This belief, which widely obtains even at the present day, requires of me, before leaving the subject of hepatic affections, a more detailed exposition than I have hitherto given of my reasons for discarding that article as a remedy for these affections, as well as for other diseases. It is also due to the reputation of the Eclectic school, and will, perhaps, be expected by community at large, or at least by those who take an interest in the rival claims of the different systems of medical practice, that we should not only give a full and explicit exposition of our reasons for repudiating mercurial preparations, but also indicate satisfactory substitutes, which will fulfill the same indications for which mercury is generally prescribed, and which we claim to be scientific remedies, standing the test of experience and challenging the approval of the soundest judgment.

Philosophy and common sense equally require that, when an ancient and time-honored usage is attacked, not only should its inconveniences and abuses be pointed out, and the grounds for its abandonment be set forth, but also that a better and

safer practice should be indicated. I readily assent to the truth of this remark, and am prepared to comply with its demands. In regard, however, to the matter of furnishing substitutes which are even more efficient and reliable than mercury, I think enough has already been said on this subject, on several occasions, in the course of these lectures. And it therefore only remains for me, on the present occasion, to address myself to the first demand alluded to. There are two modes of answering the question, "Why do we discard mercury?" One is, if I may so speak, by *philosophy*; the other, by *authority*. The first requires an exposition of the chemical changes and uncertain combinations of mercury in the system, and its powerful, dangerous, and injurious effects upon the constitution. The other requires the production of the opinions of those whose scientific attainments, long experience, and accurate observation, entitle them to challenge the highest confidence of the *whole* medical profession. I shall do both. But as the reiteration of our theory and the results of the experience of members of the Eclectic school may be received with doubt and hesitation, I will first answer the question by producing authority.

It is by no means a difficult task to show from sources of the most unquestioned respectability, both for learning and practical experience and skill, that *the world would not be the loser if mercury were struck out of existence*, even though no remedies were known which might be used as substitutes in any disease. Men eminent in the profession, and who had been for years in the habit of prescribing mercury in some of its forms, have given it as their mature opinion, that it was "doubtful whether the diseases it entailed were not as numerous as those it cures," and they therefore hesitated "whether to hail its discovery as a blessing or a curse." Others, also high in the ranks of the old school, whose experience with the article was anything but satisfactory, and who knew nothing of the modern remedies which experience has demonstrated to be far safer and more efficient for good, have not hesitated to express their doubts as to the propriety of its use, and their belief that the world is no better off for all it has

hope to answer it finally. Calomel is given because—and we wish to emphasize our *because* with the importance due to its merits—because they do not know what else to give.

“But it is time that we treat of the more recondite qualities of calomel. No one, except a thoroughly initiated medicine man, can estimate the value of that property of calomel which gives it such efficiency as an ‘alterative.’ A patient is affected with something which the doctor can neither comprehend nor cure; but by the aid of calomel he can bring on some other complaint, which will subside after a time, when he ceases to give the remedy. Here is comprehension and cure together. In the mean time the real disorder is obscured and overlooked, or has time to get well, or is changed to something else, and there is the opportunity to make out a case, and—a bill.

“It is this ‘alterative’ property of calomel which makes it so valuable in ‘liver complaints.’ If a person have a pain in the right side and shoulder, and be ‘bilious,’ (we see you jump up to ask what we mean by bilious, and we reply very promptly that we don’t mean anything!) of course such a person has his liver out of order. Of course, it is requisite to put him under an ‘alterative’ course of calomel to rectify the disorder of his liver. What the disorder of the liver consists in is no business of yours, any more than what the ‘alterative’ quality of calomel implies. Medical logic has decided that ‘calomel is alterative,’ and alteratives are required in liver disease; therefore give calomel.

“Some of the alterative effects of calomel are very apparent. We have known stout, hearty persons altered to lean, feeble ones. Some, whose stomachs were capable of taking and digesting any kind of food, were rendered incapable of digesting anything at all; others, who were always regular in their bowels, were so altered that they found the necessity to regulate them the future business of their life. Some have a moderate sized liver altered to a large one; others are so altered as to lose a large portion of their liver, already diminished. Some find out that they have kidneys, who never knew it before; and many can define the exact boundary of

course of treatment, but, I think, rather grows out of the singular difficulty of giving up an established routine of practice, and adopting one of a different character. The profession is, perhaps, naturally inclined, from its conservative tendency, to follow in the "line of precedents," whether "safe" or not, especially where the subject is involved in great obscurity. And, moreover, the difficulty referred to is not lessened by the fact that the operations of medicine are not susceptible of that precise demonstration peculiar to the sciences of chemistry and mathematics; and therefore, though a medicine may fulfill an indication so far as its sensible action is concerned, it may still be doubtful whether it has accomplished a single point in the curative process of the case. In fact, we know that it has not unfrequently happened, that medicine has essentially aggravated disease, without any suspicion, at the time, that it had any relation to the unfavorable change which followed its operation. And, indeed, physicians may have proceeded even for years in treating disease according to a particular routine of practice, supposing, meantime, that they were abundantly successful, or at least as much so as the character of the disease treated would admit, while, in fact, the course pursued was, in many instances, positively destructive of human life, as subsequent improvements and discoveries have clearly shown. For illustration, need I cite the diametrically opposite treatment that has, at different periods in the history of medicine, been employed in various diseases; particularly in smallpox and typhus fever? Or need I refer to the rivers of blood that have been drawn, and the tons of calomel that have been swallowed in the treatment of bilious fever?—measures which modern experience has incontestably shown are not only not curative of the real disease, but have, without a shadow of doubt, often produced fatal results. Not to be misapprehended, I will add that, in all these cases, the practitioner may have been actuated by the purest motives and most conscientious impulses, possibly never suspecting that he was doing an injury, and certainly not knowing the more successful modes of treatment which awaited the progressive march of medical improvement.

But to return to the proposition in hand. As before intimated, it has been claimed with great uniformity, that mercury is a specific for hepatic affections, and the *only* specific for venereal diseases. Now if it can be shown, by a fair and impartial trial, based upon facts and observations furnished by the highest tribunals of medical science, not only that mercury is not a specific for venereal diseases, but that these disorders can be more readily cured without *any* medication than by the aid of mercury; and if, moreover, it can be shown, on the authority of Old School writers, that it has also failed in curing or even ameliorating diseases of the liver, then, I think, the case will be made out to the satisfaction of every impartial and reasonable man, and the high claims of the vaunted specific must fall baseless to the ground.

The first authority which I have to offer is that of Dr. ISAAC HAYS, an eminent physician of Philadelphia, holding important professional positions, and editor of one of the oldest and most respectable medical periodicals in the United States, and whose opinion is entitled to the highest consideration. I quote his entire preface to the translation of a French work "On the Treatment of Venereal Diseases without Mercury," by M. Desruelles, and you will see that the importance of the facts stated will justify the time and space occupied. Dr. Hays says:—

"The following translation of the memoir of M. Desruelles, on the treatment of venereal diseases without mercury, having been placed in my hands for revision, I have appended to it some valuable observations on the same subject by Mr. Guthrie, and various documents exhibiting the results of the different methods of treating syphilis in Great Britain, France, Germany and America.

"When it was announced by Mr. Fergusson that the venereal disease was cured in Portugal without mercury, the assertion was immediately hazarded that it must be owing to the complaint existing in that country in a milder form than in other parts of the world. The falsity of this assertion, however, was soon made manifest, by the successful treatment of many cases of the disease in Great Britain and

France, without the use of a particle of the vaunted sole specific. It was then said that the cases thus cured were not genuine syphilis; and various writers, among whom Mr. Abernethy and Mr. Carmichael stand conspicuous, attempted to distinguish several affections produced by impure coition, and to designate those which might be cured without mercury, and that which could be cured only by recourse to this remedy. The ulcer so well described by Mr. Hunter as possessing specific qualities, and certain secondary symptoms supposed to result solely from this sore, were believed to be incurable without mercury; while the various other sores and secondary affections were admitted to be curable by other measures. But the characters of this peculiar ulcer, imagined to be the infallible diagnostic sign of genuine syphilis, has been since indisputably shown to result from the tissue in which it is seated, and not from any peculiarity in the nature of the cause by which it is produced. It has, moreover, been equally shown that the Hunterian chancre may be cured without resorting to the use of mercury; and this last fact is now so well established, that those who believe in a specific venereal virus, and that mercury is its antidote, have been compelled to resort to the assumption that the disease has worn itself out, and now only exists in a spurious or very mild and easily curable form. Mr. Abernethy, in his 'Lectures on the Theory and Practice of Surgery,' just published, remarks, 'As this disease (syphilis) has almost become extinct, or is so modified as to be unlike that which Mr. Hunter has described, and which I had an opportunity of observing in the earlier part of my life, I do not think myself warranted in laying before the public what I have been in the habit of saying to students on this subject in my surgical lectures.'

"It would be an interesting subject of investigation, but one in which we cannot indulge in this place, to inquire whether the disease be really milder than formerly, and if so, whether it be not owing to the abandonment of the mercurial, stimulating, and other irrational modes of treatment. It is sufficient for our purpose at present, that it should be admitted that the disease can be cured without mercury; and if any one

is hardly enough to deny this proposition, we refer him to the appendix, in which he will find the returns of upward of eleven thousand patients thus cured, including a very large number of cases of true Hunterian chancre, and every form of the disease that has been hitherto described.

“The *possibility* of the cure being thus established, its *eligibility* remains to be considered.

“To determine this point it is necessary to ascertain, first, by which mode of treatment the disease is most readily cured; second, which mode of cure is most permanent; and third, and lastly, which mode of treatment is the pleasantest, and does least injury to the constitution of the patient.

“1st. *Duration of treatment.* In the official report of Sir James McGrigor and Mr. W. Franklin,* it is stated that the average period required for the cure of primary symptoms without mercury, where buboes did not exist, was twenty-one days, and with mercury thirty-three days.

“That the average period for the cure of primary symptoms with buboe was forty-five days when treated without mercury, and fifty days when treated with mercury.

“That the average period of cure of secondary symptoms without mercury was from twenty-eight to forty-five days, and with mercury fifty days.

“When it is recollected that these results are derived from the observation of nearly five thousand cases, they must be admitted to afford very fair means of comparison, and to possess a high degree of value.

“M. Desruelles, from an experience in one thousand three hundred and twelve cases, states that the mean duration of treatment of primitive and secondary symptoms, without mercury, was thirty-two days, and with mercury fifty days.

“It appears from the report of M. Richond, who observed

* [In the report alluded to, published by the editor as an appendix, the writers take occasion to “assure all that the following summary of the conclusions, on the question of syphilis and its treatment, may be considered as an unprejudiced statement drawn up from the answers *alone* of the regimental surgeons (British Army) to the queries transmitted by us to them in December, 1818.”]

nearly three thousand patients, that of those treated without mercury for primitive symptoms, ninety-two per cent were cured in thirty days, while of those treated with mercury, only twenty-eight per cent were cured in that period; and that of those treated for buboes without mercury, sixty per cent were cured in thirty days, while of those treated with mercury, only twenty-seven per cent were well in that time.

“Dr. Fricke states, that in his hospital, the average period of cure for primary and secondary affections, treated without mercury, was fifty days, while it was double that time in those treated with mercury.

“It thus appears from the most authentic documents, founded on experience in a sufficient number of cases, and in different countries, that the cure is effected in a shorter period of time by the non-mercurial than by the mercurial practice.

“2. *Permanency of the cure.* In those treated *without mercury* by the surgeons of the British army, it is stated by Sir James McGrigor, that secondary symptoms occurred in not quite five per cent; Richond states them to have occurred in two and a half per cent; Fricke had no case of secondary affection. In Sweden secondary symptoms occurred in seven and a half and seven per cent; in America they occurred in two per cent—making an average of four per cent.

“In those treated *with mercury*, it appears from the report of Sir James McGrigor, that secondary symptoms occurred in nearly two per cent; in those treated by M. Richond they occurred in five and a half per cent. Of those cured in the Swedish hospitals, secondary symptoms occurred in fourteen and twenty-two per cent; and in those treated by Dr. Harris, they occurred in upward of ten per cent—averaging nearly eleven per cent. If it be said that the cases treated by fumigations with cinnabar should not be taken into this account, the number of secondary cases would even then be eight per cent, or double of those occurring after the treatment without mercury.

“Thus secondary symptoms are shown to occur more fre

quently after the cure of primary symptoms *with mercury*, than when cured by antiphlogistics.

“ 3. It only remains for us to inquire which mode of treatment is the pleasantest, and does least injury to the constitution of the patient. That the antiphlogistic treatment is most agreeable to the patient we believe has never been questioned, and that it never produces any injurious effects on the constitution, must be admitted. Of nearly two thousand cases reported by Sir James McGrigor as cured without mercury, every man was fit for immediate duty on dismissal from the hospital; while of those treated *with mercury* one man was discharged the service on account of the injury his constitution sustained from the remedy, and another, after treatment for secondary symptoms by mercury, in consequence of that complaint. But the terrible consequences sometimes resulting from a mercurial course, are too well known to require a description; the subjecting of a patient to this treatment has always been admitted to be an evil, and the only apology ever offered is its being a necessary one. This apology having been shown to be no longer admissible, those who persist in the mercurial treatment in opposition to as large and authentic a body of evidence as has ever been collected to determine any point of practice, must offer in extenuation something more positive than their own vague notions, idle fears, or a blind devotion to dogmas founded on prejudice, and miscalled experience.

“ For ourselves, in ten years practice, we have never put a patient through a mercurial course for any form of venereal affection, and for the last six years we have not used a particle of mercury in the treatment of this disease, and have never had reason to believe that our patients were less speedily or effectually cured than those treated with mercury. Of those treated by us for primitive symptoms, in the Philadelphia and Southern dispensaries, and in private practice, we know of but two cases of secondary symptoms. * * *

The importance of the subject, and the deep interest attached to it, will we trust be considered a sufficient excuse for offering these observations to the public. ISAAC HAYS, M. D.”

I will only add that the statements here made by Dr. Hays were taken from documents emanating from the heads of different hospitals in Europe, and from army surgeons, whose opportunities were ample for instituting, and noting the results of, the most rigid comparisons in every respect; and the statistics thus obtained were embodied in reports made to the respective governments by which they were employed.

I shall now offer copious extracts from the work of M. Desruelles, which has received the indorsement of Dr. Hays, adding only such remarks as may, in a measure, serve to connect the several topics. In reference to the scope and spirit of his work, the author remarks :

“ The work is a compend of all my observations made at Val-de-Grace, between the 16th April, 1825, and the 31st July, 1827. I still continue them with equal assiduity, and the whole of my observations from the latter date, with the particular results, form the materials of a second volume, which will be prepared on the same plan, and published at some future period.

“ Previously to the present time, those physicians who wrote on venereal diseases published only the general results of their practice, and have not made known the proportion of cures and failures in the treatment which they had adopted. When they established theories, or laid down therapeutic principles, their only bases were approximate estimates or calculations, the accuracy of which is at least doubtful. To diffuse more light on this important branch of science, it appears to me that it would have been more proper to compare collectively and individually the symptoms and the results of the various therapeutic methods—to exhibit numerically the different results—to describe with the most scrupulous exactness every symptom—to examine the influence of the treatment upon their appearance, termination, and time of cure—to investigate all the causes, both internal and external, which in any way have had effect—to take into consideration idiosyncrasies, the state of the atmosphere, and situation of individuals—to descend to the most minute details, in order to attain general facts, and particularly to relate honestly the

cures and failures which ought justly to be attributed to each of the methods employed. Most advantageously situated to pursue this untrodden and truly experimental path, I have profited to the utmost of my ability by the advantages offered me. I have endeavored to ascertain comparatively the proportional duration of the treatment of venereal diseases, with and without mercury; in the latter case, whether I submitted the patients to a vegetable and light regimen, or permitted the use of copious substantial and stimulant nutriment, or in short, whether the local treatment were complicated or stimulating, null, or antiphlogistic. In these researches I examined all the symptoms collectively, and each one separately, whether simple or complicated; I likewise made similar comparative estimates of the progress and termination of syphilitic diseases, taking into consideration the symptoms developed during the treatment, and their probable causes. The relative frequency of certain symptoms, and the causes of that frequency, I have determined by the most exact calculations. The indication of the measures employed by me displays their influence by the more or less prompt cure of the venereal affections. I have also noted the protraction of the cure in such patients as have deviated from the regimen during the simple treatment. In short, I have done all I could to collect every document necessary to answer a number of queries of which I cannot now make mention, but which will be hereafter considered, in order to determine with mathematical accuracy, problems, the solution of which, until the present day, has been attempted only from simple probabilities. My work comprehends both primitive and secondary symptoms observed in those who have left our wards perfectly cured; these symptoms I have compared together every time it has been in my power to do so.

“Should any one imagine that I have abandoned the use of mercury entirely from prejudice, he entirely deceives himself. I have done so in consequence of the observations I have made, and the numerous facts I have collected; these have taught me to appreciate justly mercurial treatment, and made me resolve to abandon it. Very far from considering

mercury as ineffectual, I had in it the most implicit confidence; it was only after having made comparative essays, with and without mercury, after having witnessed frequent lamentable consequences from its use, and reiterated relapses after the mercurial treatment, that I gradually divested myself of the erroneous opinions and prejudices I had imbibed from the perusal of the writings of other physicians.

“ I soon perceived that simple dressings, and in most cases attention to cleanliness, might advantageously be substituted for unguents, powders, and irritating lotions—that the cautious use of antiphlogistics accelerated the cure of the venereal symptoms.*

“ As soon as circumstances would permit me, I substituted, in place of the animal and stimulating diet, a vegetable and light one, and was promptly convinced that, however opposed might be the opinions of medical men on the nature of venereal diseases, diet is to be regarded as the true basis of the treatment, whether in this mercury be employed or not.†

“ Visit all the hospitals where the old method is employed, and it will very frequently be observed that the most distressing consequences ensue where the animal and stimulating diet is prescribed at the same time with mercury; and these consequences will be but seldom met with in the hospitals where patients who take mercury are submitted to a vegetable and light diet. Does not this simple remark point out to us that the dreadful affections which have been considered effects of mercury, are for the most part caused by the copious and stimulant regimen? It certainly cannot be denied that mercury, administered in excess, often augments the intense-

* “ I had already made this remark, and had learned to appreciate the beneficial effects of a mild and light diet, at the Hospital of the Royal Guard, when in 1819 Baron Larrey confided to me the care of a portion of the venereal patients in the absence of Dr. Laroche.”

† “ When I entered into the exercise of my duties at Val-de-Grace, there were one hundred and six syphilitic patients—eighty-two were afflicted with the primitive, and twenty-four with consecutive symptoms and mercurial affections. With the exception of a few who had entered but a few days previous—all the above patients were under mercurial treatment, and their neu-
was materially stimulant.”

ness of venereal symptoms, the system being in a constant state of irritation excited by the remedy; but these very symptoms become frightfully dangerous, when by stimulants we increase the fatal activity of the mercury. Such consequences are seldom if ever seen with the opposite treatment. Who would believe that the vegetable and light diet, whose soothing effects cannot be doubted, has excited in the breasts of some both envy and ill will against the simple treatment of Val-de Grace. These persons have pitied, and with a zeal rather too complaisant, the patients entrusted to our care. This studied and affected pity was no doubt only a plausible pretext for concealing from the world the unhappy results of the contrary method. The note published in the *Journal Militaire* must have removed the doubts of those pretended friends to humanity, who always feign to experience the most tender solicitude for some, that by the pretext they may the more deeply injure others.

“The most authentic facts prove that there is no difficulty in pursuing our plan. Physicians who will prescribe it, will perceive how efficacious it is, although they may have been partial to the mercurial method. However, to adopt the vegetable and emollient regimen with due attention to simplicity in dressings, to apply antiphlogistics to counteract external venereal symptoms, and to continue at the same time the internal administration of mercury, would be, we think, employing two opposite methods. Would not the effect of such treatment be to produce at the same time asthenia by the regimen and simple dressings, and to stimulate the organism by the specific remedies? Such is the plan of treatment we pursued in the very commencement of our career, and surely its effect should induce all medical men to abandon the use of mercury—it was at all events one of the principal causes of my doing so.

“In 1825, I conceived that it was necessary to prepare patients for the administration of mercurials, by submitting them to a vegetable and demulcent regimen, using antiphlogistics at the same time; but while they were undergoing this pretended preparation, (if we can so term it,) it frequently

happened that many symptoms entirely disappeared, such as balanites, simple ulcers, irritations, and slight vegetations about the anus and penis, pustulæ, and orchitis. I then had to choose the alternative of letting the patients leave the hospital without giving them mercury, or forcibly retaining them in order to administer it. Some of course left me without having taken any of this medicine, and others again who had taken too small quantities of it for me to consider their cure complete.

“In order to obviate this inconvenience, I determined to administer mercury to the patients as soon as from the influence of the simple treatment, the symptoms began to wear a favorable aspect; but I found the cure not only retarded, but more difficult to accomplish, as there was always some new symptom appearing to impede it. On account of these new observations, I resolved to make comparative experiments on every symptom individually. I devoted the year 1826 to these experiments, and finally being convinced that mercury was unnecessary, when the simple and antiphlogistic treatment had been rigidly pursued, I abandoned its use altogether, and since the first of January, 1827, up to the present day, I have not administered one single atom of mercury, whether my patients were laboring under the primitive or secondary symptoms of syphilis.

“For more than a year we have sought, without prejudice, for a single case where mercury should be substituted for antiphlogistics, but no one has presented itself. Whenever the cure is retarded, or we find new symptoms appearing, the cause can always be traced to the patient's having deviated from the proper regimen.

“Before I had acquired the habit of distinguishing by the aspect of the symptoms, whether my patients had deviated from the prescribed regimen, I thought that those ulcers styled Hunterian required the application of mercurials, but a considerable number of facts have convinced me that I was wrong, and that the Hunterian ulcers will as readily yield to antiphlogistics as the simple and phagedenic. * * * *

“There is surely no longer any doubt but that diseases pro-

duced by the abuse of mercury, and even by the methodic use of that metal, have been confounded with the secondary symptoms of syphilis. Should the new method of treatment be generally adopted, before long a considerable diminution will take place in the number of those symptoms called secondary, and which have been so unhesitatingly ranked among syphilitic affections.

“ We instituted some experiments on dogs with different mercurial preparations, to ascertain the various modifications produced by mercury. Some received the mercurial influence by friction, and others by administering to them the corrosive sublimate in solution. All were abundantly fed with soup, meat, and bread, and submitted to the usual treatment employed in the hospitals where the ancient method is still retained.

“ A robust, healthy, active, and lively dog, was rubbed daily with the strongest mercurial ointment. Salivation commenced at the seventh friction, was profuse at the twelfth, but still the mercurial friction was persevered in. The animal thinned gradually, became dejected, the salivation diminished, and he died the day after the thirtieth friction, in a state of extreme emaciation. The body was opened in the presence of the students, by Mr. Cornuau, *Chef de Travaux Anatomiques* of the Val-de-Grace Hospital, and the following alterations were found :—The teeth were almost entirely bared and loose, especially the inferior incisors ; the gums in a state of ulceration ; the internal surface of the mouth, and the velum palati, were covered with extensive aphthæ ; the pharynx was red ; the œsophagus in its natural state ; but about the *bas fond* of the stomach there appeared scales of a dark-red hue ; these were likewise seen on the mucous membrane of the small intestines ; the salivary glands and pancreas were reddish, and covered with numerous vessels ; the bones did not appear to have suffered any change ; the marrow was quite liquid, and of a reddish color, the heart was flaccid ; the lungs in their natural state, and the brain gorged with blood.

* * * * *

“ Those physicians who are opposed to the method we

employ at Val-de-Grace, although compelled to acknowledge the success of this method, will retrench themselves with apparent prudence behind the question of relapses, which they will advance to intimidate practitioners; they will require an account of those relapses, and perhaps they will even inquire the exact number and the consequent results. If in France this question be newly proposed, and yet unanswered, it is already old, and decided in favor of the treatment without mercury in all countries, where this method, imperfect as it may be, has been successfully followed for the cure of venereal diseases, both primitive and secondary. Facts collected by many medical men, prove that relapses, consequent to the treatment without mercury, are infinitely more rare and less serious than those after the mercurial treatment. We can likewise show similar results. The slight relapses that have come under our notice, only occurred with headstrong men, who, by frequent deviations from the regimen, rendered incomplete the curative modification which should have been produced by the treatment without mercury.

* * * * *

“Until now, the relapses consequent to the mercurial treatment, have not been verified with sufficient accuracy to serve as a term of comparison. They have never been properly inquired into, although frequent and serious enough to engage the attention of medical men. The wards of the hospitals were crowded with patients, who, after having remained there for entire years, and undergone several courses of mercury, were imperfectly cured of the dreadful afflictions resulting from this treatment. From the accounts we have taken, it appears that of all those who left our wards restored to health, between the 16th of April, 1825, and 31st of July, 1827, about one out of six suffered from relapses after mercurial treatment, or diseases produced by the abuse of mercury; and at the time we took charge the proportion was one in four.

“Let an impartial comparison be made between the results of the mercurial and non-mercurial method, and it will be seen that the latter, in the sole consideration of the length of treatment and the consequences, possesses invaluable advantages.

It is easy to conceive that it must be so. In following the mercurial and stimulating method, the salutary tendency of the organs toward the cure, is at every instant opposed, while in the application of the mild non-mercurial method, we continually favor and follow step by step the effectual advances of nature.

“The simple method now followed at the hospital of Val-de-Grace, will no doubt be soon generally adopted in all military hospitals. Men of probity, and true lovers of science, have been directed to employ it in several hospitals of the kingdom.* The happy results they will meet with, will soon teach them how much to value that method which has already taken the place of the old one, in several of the naval hospitals. It is now undergoing a trial in a civil hospital in Paris, where an immense number of civil patients are annually received. Although in this hospital the simple treatment is not absolutely adopted, it is nevertheless prescribed, from a knowledge of the success it has obtained at the Val-de-Grace, and the first trials having been as favorable as could be expected. Successful trials of it have been made in England, Portugal, Bavaria, Sweden, Germany, North America, Hamburg, and particularly in the hospitals of Metz and Strasburgh. The English, Bavarian, and Swedish governments have encouraged the zeal of those men who have devoted themselves to this new therapeutic study; the heads of the military medical departments of these kingdoms have admitted its efficacy, and even kings, in special ordinances, have given to such physicians as propagated the non-mercurial method, tokens of their royal favor.†

“With the exception of some few who made the most laudable endeavors to overcome public prejudices, the rest of the French physicians remained servilely attached to the ancient

* “The members of the Military Council of Health of the camps and armies of the king have requested the health officers of various hospitals to employ the non-mercurial method, as followed at the Val-de-Grace.

† “Advice, founded on experience, against the use of mercury in venereal affections, by Francis Joseph de Besnard, Doct. Med. Inspector General of the Military Hospitals of Bavaria, Munich, 1809.

routine, and to a theory not less absurd than tyrannical. Not long since, little sensation was awakened by the works of Thompson, Rose, Guthrie, Carmichael, Fergusson, Hennen, Gordon, Brown, Evans, Jourdan, Lefebvre, by the official note published by Sir James McGrigor and Sir W. Franklin, or by the report of the Commission of Sweden. And such is still the domineering spirit among us, that we fear to peruse the work of Mr. Jourdan; that the one by Mr. Richond meets with but poor acceptance; that the Clinique of Devergie is subscribed to with reluctance, and that the new system of the Val-de-Grace is rashly judged of by men, who entertain of it at best but an inaccurate and confused idea.

“ The non-mercurial treatment has received the approbation of enlightened men, whose opinion, founded on experience, is of great weight in practical medicine. Dr. Gallée, one of the military health inspectors general of the service, informs us that he has successfully employed it in the Brest Hospital for upwards of twenty-five years. Professor Chausier adopted it a long time since; he esteems it more rational and sure than the mercurial treatment. Dr. Ribes has frequently employed it, and in his works recommends its adoption. Drs. Gama and Broussais, chief officers of health in the Val-de-Grace Hospital, have witnessed the happy results I have obtained by it, and both applauded my endeavors and encouraged my zeal. Those gentlemen, and Drs. Damiron, Fleury and Bégin, have applied to the venereal diseases among the wounded and otherwise sick patients in Val-de-Grace, the same method we follow, and have been always satisfied with its good effects.

“ We sincerely hope, and have good reason to believe, that the non-mercurial method will soon be received and employed by enlightened physicians, who, always disposed to adopt what is really good and useful, only wait, before deciding, for facts that may dissipate all doubts, and carry conviction with them. But it is probable that this method will be repulsed, even calumniated, by those routine practitioners, who always see with regret that the rut, through which they have so long dragged themselves along, is getting smoothed, and who

remaining stationary, while science rapidly advances, prefer rather to decry its progress than follow in its wake. The method we propose has nothing to expect, nor anything to fear, from the opinion of such men, whose opinions are as little calculated to insure the success of a new therapeutic method as to accomplish its ruin. It is therefore to us of but little importance to bring them over to our opinion—we even believe it were vain to attempt it; but we aspire to convince physicians of merit, who, too confident in mercury, believe it to be useful in every case and under all circumstances. We dare to flatter ourselves that such physicians as err unwillingly, and who, from I know not what conviction, remain attached to the mercurial method, will not absolutely reject the simple method we pursue. Undoubtedly, they will think it a duty to ascertain whether our assertions have any foundation, and whether the facts which have brought conviction to our minds be correct, whether they be as numerous as we have said, and finally, whether they prove the inutility of mercury. We most sincerely desire an impartial examination; but even supposing that the strength and number of facts which they will notice do not suffice to convince them of the inutility of mercury in the treatment of venereal affections, whatever opinion they may profess, it is utterly impossible for them not to perceive soon, and publish in their turn to the world, the necessity of simple dressings, the utility of antiphlogistics, and the efficacy of the vegetable and emollient regimen, and be constrained themselves to agree that mercury must never be administered but with great caution. We feel convinced that in time they will abandon its use, and consider it only as a modifying agent, which may offer some advantages in certain cases. These cases must be extremely rare, for we have, during a whole year, fruitlessly sought for a single one among a vast number of patients.

“Certainly the works of our predecessors, and those who will follow the essay we now present to the public, will produce important ameliorations in the treatment of syphilitic diseases; and if, as everything induces us to believe, our hopes are realized—if the non-mercurial method be exactly

and wisely applied in the treatment of venereal diseases—can we be blamed for saying that it will be a true blessing to mankind? In fact, it will render these affections gradually less severe, and will assuredly diminish the number and gravity of the symptoms, which complicate them during the mercurial treatment. We will no longer see those shameful and indelible marks which have disturbed the tranquillity of so many families, and embittered the existence of those who suffered them. The long train of mercurial diseases, those chronic and disorganizing affections, the dangers of which increase and multiply in proportion to the number of doses of mercury employed to remove them, will disappear never to return; syphilitic symptoms will no longer assume the terrible forms assigned to them hitherto; their phenomena will be simple, their cure rapid, and without relapses; in short, the hospitals for the reception of venereal patients will no longer present the hideous spectacle which many of them now do. These consoling ideas, these flattering hopes, are undoubtedly sufficient to excite the zeal of all men desirous of serving the interests of science, and contributing to the welfare of their fellow creatures.”

I will conclude this part of the subject by reproducing the testimony of M. Ricord, of Paris, the distinguished and eloquent medical instructor, whose opinion, based upon results of treatment in thousands of cases, must carry conviction to the minds of all but the hopelessly bigoted. M. Ricord remarks: “In fulfilling the therapeutical indications which may be presented by the different pathological states which attend this variety of chancre, we must be careful not to fall into a common error of attributing the disastrous and rapid course of this variety of chancre to the nature of the specific cause or greater intensity of the virus, and thus be led, like the partisans of the old school, promptly and energetically to have recourse to the use of the pretended specific, and administer mercury in doses proportionate to the strength of the specific cause they wish to neutralize. Let it be remembered that the principle of syphilitic diseases is always the same, as in variola, and the differences only depend upon the indi-

vidual peculiarities, and treat this disease, like all others, rationally.

“I can confidently assert that, except in a very few cases, the so common employment of mercurial preparations, either as dressings or internally, are most hurtful in phagedenic chancres, and the more so as not being accompanied by induration, there is much inflammation and nervous irritability. It is by no means uncommon to see these ulcers, when approaching the period of reparation, relapse under the influence of mercury into their former state, and chancres which were at first limited and regular, become phagedenic, simply from the employment of mercury.”

Further on, the same author says: “From our remarks in another place, must we in all cases renounce mercurials and anti-syphilitic remedies? It is true that in most cases of these affections mercury, sudorifics, etc., are more prejudicial than useful: there are, however, instances in which they have produced good results; but we are at present unable to indicate the precise circumstances in which mercury is useful or even indispensable. If the disease progress notwithstanding the means pointed out above, I have then recourse to this medicament, which was so long and often considered as specific; first, in local applications, and then as a general agent internally or by the skin, according to circumstances which I shall afterward describe. I continue the local or general use separately or combined, according to the effects obtained, if there be improvement; but if the disease increase I suspend them. In those cases where, according to ancient errors, it is thought necessary to begin by mercurials, which I would not advise, we must not be so blind as to continue their use when we see their evil results.”

Adding only that my experience, which has not been limited, fully confirms the statements thus exhibited, with the improvement that the primary disease, in my own practice, seldom lasts longer than from five to ten days, I here dismiss this part of the subject, believing that every candid and impartial inquirer after truth must render his verdict against the claims of mercury as a specific for venereal disease.

In regard to the application of mercury to liver affections, I shall not be able to present the extensive comparisons of different modes of treatment that I have done in regard to venereal diseases. Hepatic affections being, perhaps, of less frequent occurrence, especially in armies, and not so imminent and disabling, no such advantages, as in the other disease, have been afforded for special observation and comparison in the various hospitals. I shall therefore have to rely upon individual opinions based upon the results of private practice. This subject will be resumed to-morrow.

LECTURE LVIII.

MERCURY.—CONTINUED.

Its application to hepatic disorders — Witnesses pro and con — Quotations from Dr. Tweedie and others — Want of unity — Mercury ruled out in structural disease — Also in functional — Quotations from Dr. Hamilton — Mercury a poison — Changed to corrosive sublimate in the stomach — Injurious effects in various affections — Observations of Dr. Hamilton and Dr. Carlisle — The author's views and experience.

What appears to be the concurrent testimony of so many authors and practitioners in favor of the use of mercury in the treatment of liver affections, it may be urged, cannot be overbalanced by the opinions of the few that may be found in opposition to its employment. But it should be considered that the treatment of hepatic diseases with mercurial preparations, has been regarded as “regular,” and as such has been received by students from their preceptors or text-books with unquestioning confidence, and followed as a matter of course. In other words the mercurial practice with the mass of the profession, has been pursued as a mere routine course, recognized by authority and convenient for the practitioner. Thus the number of its advocates and followers has, I acknowledge, been multiplied, but their testimony has, in the main, been merely a reiteration of opinions and doctrines of the few who took the lead in favor of the remedy in question. Even many of those who have been compelled by experience to

lose confidence in the "regular" treatment, and who have had independence enough to vary in some measure from it, have been so thoroughly imbued with the idea that mercury in some form must be the specific for hepatic affections, that their efforts at improvement have been confined to attempts at modifying the remedy, and the mode of its application. On the other hand, most of those whose voice is raised *against* this drug have overcome their own prejudices of education, have not only observed the melancholy results following the use of, and sought for improved modes of applying mercury, but, leaving the beaten track, have discovered and tested agents found to be capable of accomplishing all the good ever derived from mercury, and never followed by its deleterious consequences. Their opinions are not, therefore, second-handed or traditionary, but the result of research and personal observation. So that among actual observers of facts, and independent seekers for truth, there is not arrayed on the side of mercury the numerical preponderance which the superficial observer might expect to find.

But this is not all. Even those who still feel a lurking favoritism for this idol of the profession, do in reality condemn the mercurial practice. Quotations might easily be made from writers of unquestioned authority who, clinging as they do to the agent as necessary in some cases of hepatic disease, condemn it in others for which it is highly and constantly recommended by their contemporaries. Others again demonstrate its evil results in these very cases, but still regard it as a useful remedy in other forms of disease, while others are led by observation and experience to entertain suspicions that even in the few cases of hepatic disorder for which they still employ this mineral it might be readily dispensed with; for while they have often witnessed its want of success in the cure of liver affections, and the injury resulting from its use when thus employed, they have also frequently observed disorders of the liver produced by the administration of mercurial preparations for other diseases.

Dr. Tweedie says: "It is a well established fact that mercury, administered as a remedy, causes hepatic disease, which

presents itself sometimes under the distinct character of hepatitis, and sometimes under the more obscure garb of jaundice," etc. "Dr. Dick, who practiced long in Calcutta, states, in a letter to Dr. Saunders, that he has often observed chronic liver attacks succeed to long courses of mercury undergone for the cure of venereal complaints. Dr. Cheyne, in the space of two years met with three cases of jaundice produced by mercurials; and he had been credibly informed of its appearing in large venereal establishments during the exhibition of mercury. Dr. Nicholl when serving in India with the 80th regiment occasionally observed hepatitis come on a *few days*, but often *weeks*, after a mercurial course for a venereal complaint; a great proportion of the soldiers who had been treated for syphilis suffered from inflammation of the liver; and in eight instances the same effect was produced by the exhibition of mercury administered for the cure of chronic ophthalmia. Dr. Chapman of Philadelphia relates a case of a similar description, and ascribes the prevalence of hepatic complaints in his neighborhood to the employment of mercury in the cure of autumnal fevers; he also states on the authority of some old practitioners, that previously to the introduction of the mercurial practice into that district, hepatitis was scarcely known in it."

It is difficult for me to accredit the opinion that a remedy can cure the same disease it creates, and I am therefore led to infer that the cases in which mercury ever has any beneficial effect in liver affections are not of an inflammatory character, but cases of venous congestion, and that even here its beneficial influence is so readily accomplished by other and safe means that the argument for its administration falls to the ground. Mr. Annesley insists on the difficulty and impossibility of inducing salivation so long as the inflammatory action is unsubdued, and conceives that the use of mercury so long as this is the case, favors the formation of abscesses. In these views Mr. Twining fully concurs.

Thus while it is admitted that mercury should not be administered in *active inflammation of the liver*, and that abscess of that viscus is liable to follow its operation in such cases; it is contended by the same authors that it

should not be given when the inflammation has passed into *suppuration*. Dr. Tweedie also remarks, "But if medical practitioners differ as to the indications which mercury is intended to fulfill in the treatment of hepatitis, scarcely less do they differ as to the mode of its administration; as to whether the system ought to be brought under its influence, according to technical phrase, by small doses repeated at short intervals for a considerable length of time, or by larger doses administered at more distant intervals." These quotations not only show a want of unity of sentiment in regard to the administration of this remedy and its effects upon the system, by those who are daily in the habit of using it, but in my judgment afford reason to believe that the curative influence of the remedy has been greatly over estimated in every disease. Again says Dr. Tweedie, "That the number of practitioners in India who rely solely upon the mercurial treatment of hepatitis without the employment of venesection has in recent times greatly diminished we have much satisfaction in believing; but that they are wholly extinct must not we fear be supposed. Sir G. Ballingall in 1818, and Mr. Annesley ten years later, speak of the prevalence of this mode of practice with unqualified reprobation." * * * *

"According to the best authorities of the present day the proper period in inflammatory affections of the liver for commencing the use of mercury is after the violence of the attack has in a great measure been subdued by the ordinary antiphlogistic remedies. Exhibited at this period of the disease, it has been supposed by some of the most experienced authors, to remove accumulations of acrid bile, to diminish sanguineous congestion and to obviate the tendency to chronic inflammation which frequently remains after the acute symptoms have subsided. Whether these purposes might not be equally effectually accomplished by other means, is a question that could only be ascertained by very cautious trials in a considerable number of cases, and on which we do not feel ourselves entitled to offer a judgment." The language here employed certainly renders the confidence of the author in the propriety of using mercury in any condition of the system

for hepatitis very equivocal, and is also strongly indicative that he believes other remedies can be given to fulfill the indications supposed to be answered in the use of that agent.

In speaking of the use of mercury in the more chronic form of hepatic affections, the same author remarks, "When we come to inquire into the objects contemplated by practitioners in the administration of mercury in the more chronic and structural diseases of the liver, it is no longer the mere regulation of the secretion or excretion of the bile, nor the diminution of the force of the circulation, that are assigned as the motives for its employment; but it is to promote the absorption of morbid depositions. Of the power of mercury in stimulating the absorbent system many familiar illustrations might be quoted, as the disappearance of dropsical effusions under its administration alone or in combination with diuretic medicines; the removal of the lymph effused in iritis; the diminution of indolent enlargement of absorbent and secretory glands. But these are salutary changes which *nature frequently accomplishes* for herself or with but little assistance; and it may be fairly questioned whether any of the structural alterations of the liver not of an inflammatory character, which do not undergo spontaneous resolution, ever disappear under, or in consequence of, the administration of mercury. At all events, the prejudicial operation of mercury in the chronic structural affections of the liver, is recognised by a number of high authorities. Mr. Thomas Clark mentions that he had frequently known very bad effects produced in liver diseases from the too violent operation of mercury. 'Nay, it has often appeared to me,' says he, 'that even when it has removed the disease in the first instance it has laid the foundation for a relapse which proved fatal. The excessive debility occasioned by a violent mercurial course readily accounts to me for such consequences.' Dr. Dick, whose experience in liver complaints both in India and England was very extensive, also notices the great liability of those complaints to return when treated with mercury. Nor is the view taken by Drs. Pemberton and Saunders of the effects of mercury in this class of cases more favorable.

“To those who participate in the opinion we have ventured to express of the injurious effects of mercury on the economy, even when very cautiously administered, and who at the same time are impressed with the belief that the affections of the biliary organs require specific remedies for their treatment, it cannot but be gratifying to find in how high estimation the nitro-muriatic, as it has been called, exhibited both internally and externally, is held by India practitioners in the treatment of these diseases.”

Having thus given you the substance of what is said, on the subject of the use of mercury in the treatment of the acute and chronic inflammatory affections of the liver, by one of the most able and learned authors of modern times, I can but ask every candid mind, after reading all that highly reputable work contains, if they could possibly pursue the course of mercurial medication for the diseases of that viscus to which I have referred, with any confidence that it would be successful? On the other hand, are there not the most palpable indications that the remedy is not only not reliable in those affections, but that it is often positively injurious and frequently in fact produces hepatic disease? And even when patients do recover from those affections while under the influence of mercury, it is more than intimated that it is nature and not the medicine that effects the cure. The doctrines taught are interesting to me, in view of the great confidence that is there entertained in the curative effects of the nitro-muriatic wash or bath as contrasted with the beneficial effects of mercury, and the congratulation that is manifested in the hopeful expectation that the uncertain and equivocal mercurial preparations are to be superceded by the new remedy as it is called. It is certainly gratifying to observe with what enthusiasm the *liberal* members of the profession hail the advent of a remedy that promises to take the place of that dangerous and uncertain one which has so long held the profession in bondage in the cure of many disorders. What may we not expect therefore from such members of the profession when they shall learn, what myself and others have in thousands of instances demonstrated, that these same affec-

tions can be, most of them, successfully treated, and that too with remedies that are as far superior to the nitro-muriatic bath, or the nitric acid internally, as their most sanguine hopes have suggested for these, in place of mercury.

But this is not the only testimony that I have to adduce against the mercurial treatment for chronic hepatic affections. Dr. James Hamilton says, "The ordinary mode of exhibiting mercury for the cure of chronic hepatitis in this country, not unfrequently hurries on the disease, or by impairing the constitution, lays the foundation for paralytic affections, and it may be truly affirmed that it thus often shortens life." Says Dr. Farre, "Patients suffering under the disease (chronic liver affection) are not, as far as I have observed, benefited by the operation of mercury."

Having considered the use of mercury in the *structural* affections of the liver, I have now to detain you a short time in referring to the same author first quoted for his views of the use of mercury in its *functional* disorder. Dr. Tweedie says, "The following indications of treatment as applicable to the several forms, are: 1st, to diminish biliary secretion when excessive; 2d, to increase this secretion when deficient; 3d, to correct it when vitiated; and 4th, to promote the excretion of bile and the removal of spasm of the biliary passage.

"The first indication then to be considered, is that of diminishing the hepatic secretion when it is in excess. Independently of any specific power which is attributed to mercury in this respect—a matter hereafter to be considered—it is only by avoiding the occasional causes of increased biliary secretion that this indication can be fulfilled, viz: by avoiding exposure to high temperatures and by diminishing the quantity of animal food. * * * * *

"The second indication, that of increasing the biliary secretion when it is deficient, is *supposed* to be effected by a class of medicines that have been denominated cholagogues, respecting the exact mode of the operation of which a great diversity of opinion exists. The remedy of this kind on which most reliance is placed by British practitioners is undoubtedly mercury, and we shall afterward find that its

efficiency is *supposed* to depend, by some, on its possessing a specific power of directly stimulating the biliary apparatus, while others attribute its efficacy on the liver to its action on the intestinal canal as a purgative.

“If we were acquainted with the precise purpose which the bile fulfills in the function of digestion, we should be assisted in judging what aid medicine can afford for remedying its deficiency. Those who suppose that its action consists in correcting acescency may imagine that its place may, in part at least, be supplied by alkaline remedies. Those who conceive that the bile promotes digestion by stimulating the peristaltic motions of the intestines, must consider purgative medicines as the proper substitute for its deficiency. Leaving out of view judgment, and looking only to the results of experience, we find that the most beneficial treatment in cases of deficient biliary secretion consists in, 1st, the careful regulation of the diet as easy of digestion as possible; 2d, the administration of bitter tonics; and 3d, of laxative or purgative remedies so as to keep the bowels gently open. ‘The temporary defect, of bile,’ says Dr. Saunders, ‘may be supplied by various bitters, occasionally united with rhubarb, aloes and the like.’

“Whatever may be the purposes of the bile as a secretion, it cannot be doubted that the formation of this substance is not of less consequence as an excretion that secures the elimination of some principle noxious to the system. When, therefore, the bile either is not secreted or is reabsorbed after being secreted, have we any means of correcting its injurious effects? Little, we believe, in the way of palliation is in our power in this respect. In the very small number of cases, in which an attack of coma, supervening on jaundice, has been successfully combated, the benefit seems to have been derived from purgatives, and such applications to the head as are suggested by the apprehension of inflammation of the brain.

“The third indication is to correct the biliary secretion when vitiated. The degree of control over the acid or alkaline character of the urine, which has been derived from a more accurate knowledge of the morbid states of that fluid,

has excited hopes of similar success with regard to the vitiations to which the various glandular secretions are subject. It must be admitted, however, that the knowledge we at present possess of the biliary secretion in health and disease, does not enable us to lay down any rational indications for the correction of its morbid conditions, with the exception of the treatment required in cases of biliary concretions, which will be presently noticed.

“The fourth indication of treatment which we have specified, is that of promoting the excretion of bile and the removal of spasm of these canals, supposing them to be muscular. When the bile is accumulated in its passages, in consequence of the torpor of the powers by which it is naturally propelled, or of some slight mechanical obstruction, the administration of emetics, by calling into action the diaphragm and abdominal muscles, and thus compressing the liver, may effect this indication.”

On the subject of biliary concretions the same author remarks: “The measures which in practice have been found most efficacious in fits of gall stone are the administration of opium, the warm bath, the warm fomentations, emetics and sometimes blood-letting.”

I have been thus particular in citing to you what is said in one of the most learned and modern works on the subject of medicine, upon the various indications for treatment in the several functional disorders of the liver, and the means which are in that work advised for the purposes of fulfilling those several indications, in order to show, without being chargeable with misstatements, that the author does not himself recommend mercury in any of them, and only states in one instance what is the usage among British practitioners, with a most clear intimation of the equivocal estimation in which he himself holds it. While on the other hand, in those affections we have been considering, in which ordinary practitioners would always recommend that drug, he does not refer to it, but recommends reliance on other measures entirely. Thus, both in the various organic diseases of the liver and the different functional disturbances to which that gland is subject,

do we find not only that the learned author does not recommend mercury for their treatment, but sanctions, in the most forcible language that can be used, the objections that are urged against its use for those disorders by other writers; himself certifying to the calamitous consequences that are often inevitable when mercury is used for any disease whatever.

I cannot refrain, while on this subject, from reading to you a few short extracts from the work of the celebrated Dr. James Hamilton, Professor of Midwifery in the Edinburgh University, on the use of mercury in the treatment of various disorders.

Dr. Hamilton says: "Among the various *poisons* which have been used for the cure or alleviation of disease, there are few which possess more active and of course more dangerous powers than MERCURY. Even the simplest and mildest forms of that mineral exert a most extensive influence over the human frame, and many of its chemical preparations are so deleterious, that in the smallest doses they speedily destroy life.' Accordingly, for some ages after mercury became an article of the *Materia Medica*, physicians recommended it only on the most urgent occasions, but within these few years British practitioners seem to have overlooked the necessity for such caution, and to exhibit that medicine with very little scruple."

In describing the therapeutic action of mercury, the same author remarks: "The first effect enumerated, is an increased action of the heart and arteries; that is, a more than usually rapid circulation of the blood through every part of the body. This also occurs in fevers and inflammatory disorders, accompanied by an augmentation of animal heat. Accelerated circulation of the blood, in consequence of the use of mercury, is attended with the most obvious of the circumstances which arise from inflammation.

"Blood drawn from the arm of the most delicate and debilitated individual, subjected to a course of mercurial medicine, exhibits the same buffy crust with blood drawn from a person laboring under pleurisy. In inflammatory diseases, the mus-

cular strength, in many instances, continues unimpaired until toward the termination of the complaint. Thus every practitioner knows that individuals laboring under pleurisy have walked several miles within a few hours of death. But from the time that the influence of mercury becomes evident, the general strength declines rapidly, and is apt to excite restlessness, anxiety, general debility and a very distressful, irritable state of the whole system."

After enumerating various other injurious effects of mercury upon the general system, among which is mentioned a peculiar affection of the skin observed by himself and various other respectable physicians, the same author says: "These morbid effects of mercury do not seem to depend entirely upon the quantity or mode of preparation of that medicine which may be administered to the individual, for while it is an established fact that the mildest preparations employed externally, if exhibited in too large doses, or continued for too great a length of time, are followed by the bad effects above enumerated, it is also notorious that very small quantities of mercury have suddenly proved equally injurious. Thus in a lady (whom the author attended a number of years ago) who had had small doses of the blue pill combined with opium, for three nights successively, that the whole quantity amounted to no more than five grains of the mass, salivation began on the fifth day, and notwithstanding every attention, the tongue and gums became swelled to an enormous degree, bleeding ulcers of the mouth and fauces took place, and such excessive irritability followed, that for nearly a whole month her life was in the utmost jeopardy. Every practitioner must have met with similar cases." "Various other anomalous affections have been known to succeed the use of mercury. Thus, Dr. Falconer mentions, that 'he once saw a dropsy of the breast produced by the use of mercurial remedy for redness in the face, which it effectually removed, but instantly produced a dropsy of the chest terminating in death.' Dr. Alley asserts that he had seen an eruption appear over the entire body of a boy about seven years old, for whom but three grains of calomel had been prescribed, ineffectually, as a purgative."

"A lady, (says Dr. Hamilton,) the mother of four children, in the twenty-eighth year of her age had a bad miscarriage at the end of the fourth month. When the author was called she was very much reduced from the loss of blood, and required the ordinary palliative remedies. Three days after the first visit she complained of a bad taste in her mouth, with soreness of the gums, and on the following day salivation took place. On inquiring into the circumstances of her previous history, it was learned that, four years before, she had had for a fortnight a course of blue pill, which had only slightly touched her gums, and it was solemnly asserted that she had never again taken any preparation of mercury, and had been in general good health. The salivation was therefore attributed to some accidental cause, but when it was found to be proceeding with great violence, the medicines which the lady had been taking for the palliation of her complaint produced by the abortion, were carefully analyzed from a suspicion that some mercurial preparation might have been mixed with them, but it turned out that they contained no mercury. The most anxious and unremitting attention, and the careful exhibition of all the ordinary remedies which have been employed in similar cases proved unavailing. The salivation, with the usual consequences of emaciation, debility, and irritability, continued for above twelve months. Occasionally, for a day or two, it was checked, but alarming vomiting, with threatening sinking of the living powers, supervened."

The most substantial arguments—in addition to those of its violent and uncontrollable effects upon the system—that can be urged against the administration of any medicine, bear with most undoubted force against the use of mercury, even in its mildest preparations. Says Dr. Hamilton: "It is universally acknowledged that the morbid effects of mercury may be induced very suddenly, and by very small quantities of the medicine, in certain constitutions where no marks exist by which such peculiarities of habit can be distinguished, and there is no method of arresting their progress." Thus, though the mildest preparation of that mineral may be

administered in the treatment of disease, we can have no assurance, nor are we in possession of any means of determining, that it will not, by the hydrochloric acid that habitually exists more or less in the stomach, be converted into the most deleterious and fatal poison, corrosive sublimate. This chemical change is very liable to take place when calomel is administered, as only one proportion more of chloric acid is necessary to convert the chloride of mercury (*calomel*) into the bi-chloride, (*corrosive sublimate*,) and thus form in the stomach a chemical, corrosive poison.

Having thus shown the general constitutional effects that are liable to follow the use of mercury in the treatment of various diseases and the dangerous and uncertain results that may and often do supervene upon its administration, from chemical changes that no scientific research will probably ever be competent to detect beforehand, I will detain you a short time in reading to you some evidence of its singularly injurious effects in some of the most common disorders, and for which mercury is not only often prescribed by practitioners, but is also used in domestic practice. Dr. Hamilton says, in speaking of dyspepsia, "that mercurial preparations can be neither safe nor beneficial. If there be evidence that the food has undergone a diseased change in the stomach itself, practitioners ought absolutely to refuse sanctioning the use of mercury. The author can truly affirm that in several cases to which he has been called, where patients had been put under a course of mercury for stomach complaints, the irritable feelings before described were in a much more violent degree than he ever witnessed from the same medicine given in other diseases. Nor is it wonderful that this should happen, since it is well known that one of the most common disorders occasioned by the use of mercury is indigestion."

In speaking of its effects on the bowels, Dr. Carlisle says, "It disorders the digestive powers of the stomach; and in debilitated persons the frequent employment of it sinks the strength and provokes hemorrhoids." "And it is most evident from what has been previously said," says Dr. Hamilton, "that no physician can calculate with any degree of certainty

on the safe operation of mercurial purgatives." "By these remarks the author does not mean to allege that there are no cases whatever in which the blue pill or calomel ought to be employed for the purpose of opening the bowels, but he has strong objections to the *frequent* and indiscriminate use of such powerful and dangerous means. No prudent traveler would climb a precipice if he had a sure road along the foot of the mountain."—In this connection I must be permitted to remark, that from long experience with the pill of taraxacum, podophyllin and leptandrin which I have so often recommended to your favorable consideration, I am prepared to claim that its use is not only the "sure road along the foot of the mountain," but that it presents a broad, unbroken highway, in which no interruption may be expected nor difficulties encountered, in fulfilling those indications for which mercury can ever be safely given. For the truth of this statement I have numbers of the most notable instances in my experience, where individuals had taken mercurial remedies for various disorders and relied on it with a confidence amounting to affection, and therefore tried other means with great hesitation and only parted with it as with an old friend, who are ready to testify that the pill referred to not only operates more promptly upon the biliary secretion but more mildly than the mildest preparation of mercury. And they had been in the habit of taking blue mass on all occasions when any medicine was needed, as the sovereign "cure for every ill." Dr. Hamilton says, "daily experience may perhaps be urged against the rule of giving mercury often without any evil effects, as it may be alleged that in every complaint of infancy and childhood, calomel, within these few years, has been had recourse to, not only by practitioners, but by parents and nurses; a practice which must have been long ago exploded if bad effects had ensued." "This argument," says he, "when duly examined will be found more specious than valid." "The operations of many medicines and particularly the metallic oxides, are not easily ascertained even by professional men, and far less can they be traced by ordinary observers. Although a dose of calomel may seem merely to

affect the stomach or bowels, it may by its influence upon some latent disorder, such as tubercles in the lungs or slight enlargement of the mesenteric or other glands, give activity to a disease, the source of which might otherwise have been removed by the natural powers of the constitution. The author has for several years been impressed with the conviction of this important truth. "That there are many individuals who have often, with impunity, taken calomel as a purgative is not to be denied; but it is equally true that extreme irritability of the stomach and bowels, ulceration of the mouth, with caries of the teeth, dropsy, epilepsy, and various other modifications of disease have followed the use of that preparation. In several cases the author has decidedly ascertained, that ulcerations of the villous coat of the intestines of infants and young children, have been induced by the frequent repetition of doses of that medicine."

Mr. Carlisle says, "that grave men should violently persist in directing large doses of calomel (and I consider any dose above four grains to be large), and order these to be daily reiterated in chronic and debilitated cases, is passing strange. Men starting into the exercise of the medical profession from a cloistered study of books and from abstract speculations—men wholly unaware of the fallibility of medical evidence—and unversed in the doubtful effects of medicines, may be themselves deluded, and delude others for a time; but when *experience* has proved their *errors* it would be *magnanimous*, and yet no more than just, to renounce both the opinion and the practice."

Dr. Blackall says, "It appears to me that no accidents proper to the disease can account for all those fatal conversions to the head, which of late years have so frequently taken place in the fevers of children; and I have on some occasions been disposed to attribute them to excessive and repeated doses of calomel, which either not moving the bowels, as was expected, have given evidence of being absorbed, or on the other hand, have purged too violently and been succeeded by diarrhea without bile, and a prostration of strength, from which the little patient has never risen. Its

less severe effects are sometimes of no slight importance ; a slow and imperfect recovery, a languid feverish habit, and a disposition to scrofula."

I have thus endeavored to present to you a careful synopsis of what has been said of the injurious effects of the mercurial preparations upon the system in the treatment of some of the leading diseases for which it has been more generally prescribed, as well as some of a less conspicuous character. I think I have shown by the very best and most impartial authority, that those diseases for the cure of which mercury stands preëminent among a large majority of the profession, can, with greater certainty of success and more promptness, be treated by other means, and that without any of those hazards that are incident to the use of that mineral.

Without dwelling at greater length on this subject, I will simply refer you to the treatment of hepatic diseases as heretofore directed, in which you will recollect I have not recommended any of the mercurial preparations, for the best reason that can be given, I am fully convinced they can be more successfully treated without.

In conclusion then, let me ask, what are the claims of mercurial remedies in a general point of view? How stands its character in the cure of bilious fever? Is it here, as once supposed, the *sine qua non*, the main reliance, or even an important adjuvant in the removal of that affection? If the experience of more than twenty years, in all its various manifestations, in a western valley of extensive alluvial and secondary formations, where it is constantly found, were not sufficient to answer this question and forever negative the claims of mercury in this disease, the hosts of departed spirits once manifested through the stalwart frames of the hardy pioneers of this western clime, who were forced to premature graves in the prime of life, notwithstanding the profuse administration of this and other heroic measures, might be invoked to settle and determine this interrogation. It is, however, fully settled and will shortly be forever set at rest, that mercury is not in the least curative and never necessary in the treatment of this class of diseases.

What are its rights, and what its claims in the treatment of yellow fever, and of cholera? Set aside the statistics as far as opportunity has offered for comparison in the treatment of these two diseases with and without mercury, does the calamitous results of those two scourges of nations and cities, in the treatment they have received in the hands of the mercurial advocates, bring their trophies of success to sustain the claims of that drug in those disorders? We have but to recall the mournings and lamentations that were heard from one end of the world to the other, produced by the desolations of cholera; while the fearful mortality of yellow fever, calling for aid to succor the distresses of the sick and dying in a neighboring city, the past year,* is a most pungent and solemn commentary upon the remedies used for its cure, and none will doubt that mercury stood foremost.

In typhoid fever its claims have been waived, and at the present time few are found to recommend it in that affection.

It is therefore being hedged in on every side, or more properly, cast out as a worse than useless drug. And I have a presage that the time is not far distant, when the name of the infamous Paracelsus who first introduced it, will therefor have another laurel added to his wreath, by universal consent, of the same character as those which now adorn his brow, and then none will deny him the well deserved title, "Prince of Quacks."

* 1853; this sentence has been inserted in preparing the lecture for the press.

LECTURE LIX.

SPLENITIS—INFLAMMATION OF THE SPLEEN.

Parts of the organ involved — Symptoms — Generally associated with fever — Autopsy — Prognosis — Diagnosis — Causes — Treatment.

CHRONIC DISEASE OF THE SPLEEN.

Great diversity of symptoms and conditions — Enlargement most common — Causes — Morbid anatomy — Prognosis — Treatment.

The peritoneal investment of the spleen is often the seat of inflammatory action. This is especially the case in acute forms of splenitis where no previous derangement exists. Its parenchyma also may become involved. Indeed, it is difficult to conceive of an active inflammatory condition of either part, without the others becoming more or less affected, and the same may be said of all contiguous structures. There is nevertheless a marked difference between the symptoms of the different parts when involved. When the peritoneal covering is more particularly involved, it is accompanied with a higher grade of fever, the pain is more severe and lancinating, and there is great tenderness upon pressure. But when the structure of the spleen is the seat of inflammation, the pain is more obtuse and dull, and the tenderness much less. Of course the pain in all cases will be felt in the left hypochondriac region. In some cases, as in diseases of the liver, there will be pain in the top of the shoulder, and this is apt to be aggravated by coughing or other movements. The characteristic pain will also be aggravated by lying on the left side, in consequence of the pressure of the stomach and

intestines upon the spleen, while, in diseases of the liver, that position occasions a distressing tension of the ligaments of that organ, to relieve which patients are disposed to lie on the side affected. Sometimes the pain is so obscure and transient that the nature of the disease can be recognized only by pressure under the short ribs of the left side. The contiguity of this viscus to the diaphragm and lungs occasionally develops a slight hacking cough, and difficulty of breathing or shortness of breath.

Symptoms. The disease is usually preceded by a chill, which is soon followed by febrile reaction. Almost every case in my practice has been associated with intermittent, remittent, or some form of malarial fever. As would readily be supposed, when it is associated with malarial influences, and, not less probably, when it is the primary disorder, all the functions of the body are disturbed. Irritability of the stomach and vomiting frequently accompany the disease, and in some instances blood of a dark, grumous character is thrown up from the stomach. The skin is dry, husky and increased in temperature, the tongue is covered with a whitish coat, and the pulse considerably excited. The bowels are generally costive, though diarrhea may be attendant.

Whether all these symptoms result from inflammation of the spleen, or whether from the febrile reaction, is, perhaps, not so clear as it would be if splenitis, in its uncomplicated character, had been more frequently met with. I do not now recollect of having met with more than one case of acute inflammation of the spleen which was not *associated with some form of fever*. In this case, the spleen was dislocated and had passed down into the left iliac region, occupying a large space above the groin. If it be asked if I might not have been mistaken in my diagnosis, I answer, probably not. For I learned from the history of the case, that the patient—a young lady—had been the subject of intermittent fever. As usual in such cases, what is called “ague cake” was formed, and the patient herself had observed its gradual descent to the position which I have mentioned. Inflammation supervened. An abscess was formed, and the characteristic dis-

charge on opening it confirmed my opinion. This was the same case which I described in a previous lecture on the subject of intermittent fevers. I am convinced that purely idiopathic inflammation of the spleen rarely occurs, but you will frequently find splenitis associated with the periodical fevers of the West, and in a large majority of such cases I have no doubt all the inflammatory symptoms will promptly pass away upon the administration of the proper anti-periodic remedies. I am speaking of the *acute* form of splenitis. In its chronic form it would be different.

On account of its almost universal association with general derangement or with disease of other organs, the *autopsies* of this disease give but little clue to its real pathological nature. It has been found in every conceivable condition. But as far as I have observed, its associations have been such, that post mortem investigations have furnished few of those specific phenomena which might be looked for in its uncomplicated form. In most cases of fevers in this country, the spleen is found more or less diseased, exhibiting most peculiar appearances. It is sometimes exceedingly congested, the cellular structure being highly engorged with dark, venous blood. At other times it is enlarged by a kind of morbid assimilation, without being congested. This, however, pertains more to the chronic affection. It often becomes friable, and, when torn, exhibits a granulated appearance. We sometimes find it in a state of suppuration, or it may have suppurated and discharged internally, and thus produced peritonitis, or a small abscess may have been formed and the matter absorbed. The surface is generally coated with coagulable lymph. These are its conditions when associated with remittent, congestive and yellow fevers, and in these cases it is often completely engorged with dark, grumous blood, which has probably decomposed. It is sometimes, though rarely, associated with typhoid fever.

The *prognosis* of inflammation of the spleen, whether it occurs as an original disease, or is associated with other affections, may be considered decidedly favorable, rarely proving fatal of itself.

Diagnosis. The only diseases with which it is liable to be confounded are rheumatism or neuralgia, and pleurisy. It may be distinguished from rheumatism by absence of swelling and tenderness upon pressure, in the latter disease, and by the changeable character peculiar to rheumatic affections. The absence of fever and other constitutional symptoms in neuralgia, and the presence of local symptoms in splenic affections, are distinguishing marks. From pleurisy it will readily be distinguished by the distinct tumor and soreness which an examination of the spleen will discover, and by the absence of symptoms characteristic of pleurisy. Furthermore, in pleurisy the constitutional symptoms are more severe, and the pain is more severe, lancinating, and higher up in the side.

Splenitis may be *caused* by external violence, or severe muscular efforts, as by hard lifting or running, by suppression of customary evacuations, by metastasis of other diseases, by malarial fevers, and other causes.

In the *treatment* of this disease, the first consideration is to remove the febrile association, by which it is so frequently influenced or produced in this country. For this purpose, the anti-periodics should be administered at the proper time. If the fever is not too high, and especially if there is even a slight tendency to a decline, I would commence without delay with those measures which I have so often directed for diseases having a similar attachment. If, shortly after the first dose, the fever did not show a tendency to decline, I would persevere no longer for that time. But if I should find the skin becoming moist after the first dose, and the fever partially passing off, I would repeat the doses every two hours until the fever had entirely subsided. The appropriate remedies for the removal of the fever *may* be administered without regard to the fever or the local inflammation; but, if the fever should only decline and afterward return, the remedy should be suspended, and palliatives resorted to.

Meantime, if the local pain in the left side is severe, the patient may often be relieved temporarily by the application of sinapisms to the side, followed by hot fomentations. In

very severe cases, the application of one or two large cups to the side would give temporary relief, and perhaps effect a permanent cure. In such cases, I have occasionally applied large towels wrung out of cold water with excellent results. If there is considerable heat over the spleen, this application will be quite likely to relieve the sufferings of the patient.

But if the febrile symptoms are not removed by the local applications and the appropriate use of anti-periodics, you should suspend the latter as the exacerbation comes on, and resort to palliative measures. These are, frequent bathing of the whole surface, as often as every hour, with warm broke water and whisky, followed by friction upon the skin; the administration, if the symptoms demand it, of mild chologogue aperients—such as the taraxacum pill—and hot fomentations to the side affected. These measures will generally be followed by a more distinct remission, if not intermission, and then the anti-periodics will remove every vestige of the fever, and, in a majority of cases, carry off the local inflammatory difficulty.

It may sometimes happen that the local difficulty will not yield upon the subsidence of the fever, and then it will be proper to persevere with the local applications, and resort to more active and thorough general measures. Purgatives somewhat active may be necessary, unless contra-indicated by gastro-intestinal irritation, which will not often be the case, though it might occur. The active purgatives will divert the inflammation from the spleen, and thus, with the local means, eradicate the difficulty.

It may be desirable, where a vestige of the disease lingers, to put the system upon an alterative course of treatment. Podophyllin and leptandrin will communicate a healthy action to the glands of the bowels, and should be given once or twice a day, in doses of half a grain of the former and one grain of the latter. Cloths wrung out of cold water should be constantly applied at the same time, unless chilly sensations are produced, in which case hot fomentations may be substituted. Or if the symptoms are very urgent, scarify and apply cups over the left hypochondriac region.

I may remark here, that the anti-periodic remedies seem to exercise a peculiar influence in diseases of the spleen, more so than in other inflammatory diseases. You will rarely have to use any other means.

CHRONIC DISEASE OF THE SPLEEN.

We come now to consider the chronic form of this disease. And I would premise that I hardly consider it accurate to call it chronic *inflammation* of the spleen. At least I think I am justified by my own experience in preferring the term "chronic *disease* of the spleen."

So multifarious are the conditions, developments and phenomena growing out of the size, shape, position, and morbid affections of the spleen that it is difficult to segregate the points most suitable for a lecture. In some cases we find this organ enlarged to an incredible extent. I have seen it occupying the whole anterior part of the abdomen, extending down into the right hypogastric and pubic regions. To what extent it pressed upon the bowels it is difficult to say. I once had a case in which the spleen had slipped over into the right side of the abdominal region and was a foot in length. The individual knew just when it passed over. With his assistance and my taxis, it was replaced, and, by the use of adhesive straps applied so as to tighten the abdominal parietes, and by the aid of his position for a few weeks, it was retained in its proper place. The patient entirely recovered.

Another case was that of a German girl about thirteen years of age, the lower part of whose abdomen presented an unnatural appearance. The peculiar character of some of these German families led me at first to suspect that there had been some improper conduct. But from an examination and the history of the case, I was satisfied that the spleen had become dislocated and had fallen into the lower part of the abdomen. She was about her ordinary business, as usual, and as the symptoms were not very serious her friends concluded that they could not bear the expense of having her

treated. In this condition of affairs I left them. In about a week afterward, my partner, Dr. C——, was called in great haste. But they had taken the alarm too late. She died in a short time, and we were permitted to make a post mortem examination. We found the spleen occupying the pelvic cavity and pressing on the bladder. From its peculiar position it had assumed a round shape, and was as large as the head of a child, probably weighing four or five pounds. In other respects it appeared quite natural. It may be asked if this were not some other organ? There certainly was no other spleen, and as this had in every respect, save size and position, the character of the spleen, I leave you to determine what it was.

The *most usual condition* of the spleen is chronic *enlargement*. This is a positive growth of the natural structure, retaining its original appearance. In treating this condition you need not expect any immediate result from medicine, as you may in simple local engorgement. For it is sometimes years before this unnatural growth can be reduced, and the health of the patient restored. You will find in this condition general derangement of the system. The countenance has a pale, sallow and debilitated expression, with more or less general emaciation, though patients are generally able to attend to their ordinary avocations. Yet positive symptoms of disease will be apparent. The skin is dry, the pulse irregular, the urine scanty, and the appetite variable. The tongue presents a variety of appearances—sometimes coated and sometimes red, and the digestion, though in some rare cases unimpaired, is in a large majority of cases very much deranged.

The *causes* of this disease are similar to those of acute splenitis. It usually results from long continued action of malarial influence upon the system. The spleen becomes congested during the cold stage of fever, the excitement of the hot stage aggravates all the symptoms, and the repetition of these stages produces at last a permanent enlargement of the structure. It also sometimes succeeds or results from the acute form of splenitis.

The *morbid anatomy* of chronic affections of the spleen

develops perhaps as great a variety of appearances and conditions as any other diseased organ of the human system. It varies, in size, from the slightest swelling to the most incredible enlargement; in color, from an ashy paleness to a coal-black hue; and in consistency, from an almost fluid condition to the induration of any organic structure. To detail every appearance would be to describe every case examined.

Prognosis. With all the varied phenomena presented by the unique affections of the spleen, there are few diseases in which an unfavorable termination occurs more rarely than in this. Yet it would scarcely be expected, in cases of enormous enlargement, that any favorable change would take place in a short time. In fact I have known instances where but slight changes in the unnatural size or condition of the organ occurred for a number of years. And it is probable that, when it is positively enlarged by a kind of assimilative growth, it may continue so more or less during life. Yet by the appropriate treatment it is in most cases gradually diminished and ultimately restored completely, or, at least, to an extent compatible with apparent health and comfort. By the occurrence of an accidental displacement it becomes more liable to more active disease, and may, as in the case referred to, excite inflammatory action in contiguous and more vital organs, and speedily prove fatal.

Treatment. I have already spoken of the mode of changing that unnatural position of the spleen which is occasionally met with, but I will again describe the process in few words. You must first place the patient in a proper position, then press moderately upon the abdomen, grasp the edge of the viscus, and move it to its natural position. It must then be retained by long adhesive straps, tightly applied to the abdominal parietes, and by a wide bandage round the abdomen. It will of course be necessary for the patient to keep quiet for some time, lying mostly on the left side.

In cases of long standing, you will generally find derangement in most of the functions of the abdominal organs associated with the spleen, and, if a radical course of treatment be contemplated, it will be indispensably necessary, in order

to lay the foundation for a permanent cure, to stimulate those great emunctories of morbid elements to a more free and healthy action. If derangement of the stomach exists, indicated by a furred tongue and loss of appetite, it should be thoroughly evacuated by a free emetic. This should be repeated once in six or eight days for a few weeks, until the tongue clears off and a better relish for food is restored. The acetous tincture of sanguinaria and lobelia, given in table-spoonful doses and repeated every fifteen minutes, until the stomach is thoroughly evacuated, will be found an efficient, and, at the same time, mild emetic. Its operation may be aided by an infusion of eupatorium freely taken.

When this is fully accomplished, the bowels should be freely evacuated, and freed from offensive accumulations and morbid secretions. For this purpose it is a matter of no small importance to select a remedy which will fulfill the indications with the least disturbance to the general system, and at the same time excite a more free and healthy secretory action of the important glands about the bowels. No article in this class of remedies can be relied on with greater confidence than our antibilious physic in the following prescription:

Antibil. phys.

Sup. tart. potass, *aa* 3ss.

Podophyllin, gr. ss.

Water, one ounce, and take all at once.

This should be repeated once in four hours until its full effects are realized. It may be necessary to repeat it once in two or three weeks during the course of treatment. Generally, however, after the first effective operation, it will only be necessary to keep up a gentle action of the bowels by such means as will produce a moderate impression on the liver and other abdominal glands by which morbid secretions are eliminated. This may be done, in cases of general debility, and especially where there is a dyspeptic state of the stomach without irritation, by the use of our tonic, or Bone's bitters, with the addition of a small portion of podophyllin. The latter seems to have a specific action on the glands of the bowels. This mixture may be taken in half wineglassful

doses three times a day. But where irritation of the stomach exists—which will readily be determined by the red appearance of the tongue and a small and excited pulse—the bitters will not be likely to be borne. The taraxacum and podophyllin pill, given one every night or every second night, or oftener if necessary, will answer the purpose desired. The evacuations will, in a day or two, become more bilious and healthy, and shortly after the use of this pill the skin will begin to clear up and have a more natural feeling.

In most chronic affections, the skin is found changed in color, and greatly deranged in function, and it is therefore a matter of the first importance to keep open this outlet of morbid excretions. This, as I have often said, should never be neglected in cases of chronic disease. The whole surface should be bathed once every day, and followed with brisk friction. If the capillary circulation is particularly deficient, the warm stimulating alkali and whisky may be used. But when reaction readily takes place after bathing, the cold sponge bath should be used every morning on rising from bed, or the shower bath, if the patient can bear it, followed in every case by brisk friction until the capillary circulation is freely excited.

When the spleen is extremely enlarged, the application of an issue over the seat of disease affords an important means of diversion and counter-irritation, and at the same time furnishes an outlet for effete materials, usually in excess. If there be any objections to this measure, or if the case is not of sufficient importance to require it, the common irritating plaster applied to the side will answer. In those cases presenting a pale, sallow appearance, indicating an anemic condition of the blood, the quinine and iron should be used daily for some time, in addition to the bitters before recommended, or if the bitters cannot be borne, the wild cherry bark, in decoction, affords a very good substitute. The muriated tincture of iron is also a reliable remedy in such cases. Moderate exercise in the open air, avoidance of night air and excessive fatigue, and a nourishing diet, will, if persevered in, be generally effective, and can be relied on in these chronic enlargements of the spleen.

LECTURE LX.

NEPHRITIS—INFLAMMATION OF THE KIDNEYS.

Seldom idiopathic — Different structures involved — Associated organs affected — Acute Nephritis — Local symptoms — Constitutional disturbance — Changes in urinary secretions — Urinary calculi — Diagnosis — Of gravel connected with nephritis — Translation of gout or rheumatism — Neuralgia, etc. — Terminations — Anatomical relations — Causes — Treatment under different causes and complications — Chronic Nephritis — Symptoms — Post mortem — Treatment.

As an idiopathic affection, *inflammation* of the *kidneys* rarely occurs. Such, at least, has been the case in my practice. In fact, I have met with but few instances of active inflammatory disease of these organs, whether primary or secondary; though a low grade of inflammatory or irritative action, producing symptoms of functional derangement is by no means uncommon.

The inflammation, it is said by authors, may be located in the capsule of the kidney, in its parenchymatous structure; or in the mucous membrane lining its pelvis and calyces; and some have attempted to make certain varieties of the disease, according to the part involved. But it is scarcely conceivable that one of these structures would be inflamed alone; and it is very certain that no reliable diagnostic symptoms have been observed, by which such distinctions can be made during life; and, so far as treatment is concerned, very little would be gained if the diagnosis were perfectly clear. There will, it is true, be some differences between the renal secretion, where the disease is confined to

the substance of the gland, and that secretion in case the mucous membrane is involved; but, as before remarked, instances rarely if ever occur where the renal parenchyma is inflamed without the lining membrane of its cavities being implicated.

Not only are all parts of the gland generally involved to some extent, in case of inflammation of the kidney, but the ureter, the bladder, the urethra, and even the testicles, generally become more or less affected, from continuous sympathy, from the irritating character of the urine, or from nervous association. One kidney, however, may be inflamed, and the other remain perfectly healthy, in which case, the sound organ will, if the secretion of urine is suppressed in the other, take upon itself double duty, and thus supply the deficiency in the renal secretion from the system. This assumption of vicarious action by the kidney is not an isolated phenomenon in the system, but it occurs in accordance to what appears to be a general law of the animal economy. If a parotid gland is extirpated, there is no observable deficiency of saliva, and it is a known fact, that the ability of an arm to perform labor will be increased, by the extra effort made with it when its fellow is disabled. Even an organ will sometimes, in a measure, take on a vicarious action, to supply a deficiency in the function of a very different organ: thus, the kidneys, in torpor of the liver, will eliminate large amounts of biliary elements from the system, and perhaps, vice versa. This is an admirable provision of nature.

The only practical division of this disease, is into the usual varieties of *acute* and *chronic*. We will first take up

ACUTE NEPHRITIS.

The *local symptoms* of acute nephritis are the following: *pain* in the lumbar region, either on one or both sides, very deep-seated, and increased by firm pressure, and by jars or sudden motions of the lumbar and abdominal muscles. The pain often extends from the loins down to the front and inside of the thighs, and is attended with a feeling of numbness

excitable condition, and the gastric disturbance is very likely to produce an unusual biliary secretion which is thus discharged. The *bowels* are usually constipated, and the *skin* dry and hot. It is not at all uncommon for the fever, in this disease, to present unequivocal signs of periodicity.

It may be proper, at this point, to present a brief explanation of those changes observed to take place in the *constituency of the urine*, as connected with renal inflammation. In a large majority of cases, in this country, there is a decided predominance of the earthy phosphates in this secretion, evincing what is denominated the *phosphatic diathesis*. This condition is characterized by the deposit of a whitish sediment; and does not of itself tend to the production of calculous formations. But when ammonia and magnesia are also present the formation of calculi is by no means uncommon in this diathesis.

In the *uric acid diathesis*, the acid predominates over the alkalies. Where this acid is largely in excess, it is very apt to be attended with the formation of irregular crystalline bodies either in the kidneys or bladder; but where it is partially neutralized by ammonia, it will be shown by a brick-dust (*lateritious*) sediment in the urine, on cooling. This is the condition of the system which results in the disease called *uric acid lithiasis*, or *gravel*. The concretions may, as just remarked, be formed within the calyces or pelvis of the kidneys, and, by acting as irritants, produce inflammation of those organs.

In the *oxalic diathesis* the predominating acid is, of course, the oxalic, and, when this combines with alkalies or earths, it forms the concretions termed oxalates. This condition is not apt to be evinced by spontaneous deposits in the urine, and *oxalic lithiasis* may come on and exist, producing the pain and inflammatory symptoms, without any apparent change in the nature of the urine. Hence we generally suspect this form of gravel, where we have the other symptoms of that disease without any deposit. The crystals of oxalate of lime, which is the substance principally composing the concretions in this case, are transparent, and do not therefore

acter of the affection ; but if no evident translation has taken place, the constitutional habit of the patient, together with the high color of the urine and the copious deposit on cooling of uric acid, in the form of fine gravel, which is especially characteristic of the gouty diathesis, will be sufficiently diagnostic circumstances.

The diseases with which nephritis is most liable to be confounded are neuralgia, rheumatism in the lumbar region or lumbago, and inflammation of the psoas muscle ; all of which affections are closely allied to each other. The diagnosis, however, is not difficult in these cases. Neuralgic or rheumatic affections are seldom attended with the general febrile symptoms of acute nephritis, with gastric disturbance, with derangement and diminution of the urine, nor the frequent and painful micturition so common to this disease. The absence of pain in the scrotum, of tenderness and retraction of the testicle, and of pain and numbness in the inner side of the thigh, and the tendency of the pain to shift its locality—especially from one side to the other—will serve still further to distinguish these affections from renal inflammation. In disease of the psoas muscle, there is not so much difference in the permanency nor locality of the pain, which will often in this case be felt in the thigh, and sometimes even extend to the scrotum and testicle ; but the urinary functions will remain undisturbed, and the stomach will not be affected ; while the pain will be increased by contractions of this muscle—as in flexing the thigh—which is not the case in nephritis. In short, it may be remarked that mere muscular motion in the loins, which always causes pain in lumbago, or inflammation of the psoas, does not materially affect the kidneys, while a sudden jar or shock will produce much pain where there is inflammation of one or both of these glands.

I recollect reading an account of a medical gentleman who mistook the pain attendant on the passage of a calculus through the urethra in his own person for colic, and was treated accordingly. He obtained no permanent relief until the stone finally passed into the bladder. It was then discharged through the urethra, and proved to be a concretion

of oxalate of lime. Generally, however, the location of the pain and the paroxysmal character of the intestinal spasms, sufficiently characterize colic to prevent such a mistake.

Where the pain is produced by the passage of gravel, but without inflammation, as in nephralgia, the urinary symptoms will be similar to those of nephritis depending on this cause, and the pain will be nearly, perhaps quite, as severe, but there will be no fever, no gastric disturbance, and no tenderness of the kidney under pressure.

The most frequent *termination* of inflammation of these organs is in *resolution*. When this is the case, there will be a gradual subsidence of all the symptoms, both general and local, and health will be established within a period varying from a day or two to as many weeks.

The result next in frequency, perhaps, is suppuration. This may take place, as in the liver and spleen, in different points; so that the abscess may point in any direction: it may burrow into the structures of the loins, and thus reach the skin, it may open into the peritoneal cavity, it is even said to have been discharged into the colon, but most commonly the matter is discharged into the pelvis of the kidney itself, passing off with the urine, and causing but little inconvenience. Where the abscess breaks externally, it may result in a fistulous opening communicating with the kidney, and discharging pus mixed with urine. When you find a tumor of this kind pointing to the surface, I would warn you, as in abscess of the liver, not to be too hasty in opening it, or you may cause it to escape into the abdomen. The tumor should become very prominent before lancing, or if the pain is not too severe, it should be allowed to break spontaneously. It is even said that renal abscess has been known to take an upward direction, perforate the diaphragm, involve a portion of the pulmonary substance, and be at last discharged through the bronchiæ and the mouth.

Total *suppression* of urine sometimes results from nephritic inflammation. This is always followed by cerebral symptoms, such as coma, and perhaps convulsions, and is very seldom relieved. Where the suppression is less complete, a low form

of irritated fever will follow, while the urine discharged will be dark colored, with an offensive smell, and the case will sink into a typhous condition with little probability of recovery. *Gangrene* is not a frequent result of nephritis, though it occasionally occurs, and is of course fatal. The symptoms of this result are the sudden cessation of pain, and the evident approach of dissolution.

Acute nephritis may run into the chronic form, the symptoms of which will be given hereafter.

The *anatomical* relations of nephritis, though not very obscure, have not, perhaps, been as thoroughly and carefully studied as those of inflammation in some other localities where it more frequently occurs. Where death takes place in the early stage of this disease, whether caused directly by it or not, the cortical portion of the kidney usually exhibits a reddish dark color, and red dots may be observed throughout the glandular structure, with extravasated blood, perhaps, at various points. The gland is usually found to be considerably enlarged, sometimes enormously so. The mucous surface is congested, being reddened in color and generally more or less thickened. Where the disease has progressed farther, pus is generally found in the kidney—it may be in distinct sacs or disseminated through the tubulous structure, and sometimes filling the infundibula and pelvis, mixed with urine and sanguineous exudation.

In some instances the pelvis will exhibit the only evidence of disease, the parenchyma of the organ showing very slight, if any, traces of it. But where death has been produced by this disease, the structure of the kidney is always more or less altered, portions of the tubulous structure are sometimes indurated, but generally the renal texture is softened, and sometimes in a gangrenous condition, while coagulable lymph is found upon its surface and in surrounding structures.

When the inflammation has been the result of calculous obstruction in the ureters, or when these passages have been plugged up by fibrinous exudation, the cavity of the kidney is sometimes distended with urine variously mixed with pus, blood, and sometimes crystalline depositions.

Where chronic nephritis has existed, the kidney is always more or less changed in size and structure. It is sometimes enlarged, and where there has been dilatation of its cavity, pouches of various size are frequently found, consisting of the mucous membrane and renal substance, strengthened perhaps by adhesion of surrounding parts. Generally, however, the gland is smaller than in health, more or less indurated, and the surface roughened and granulated, or presents a lobulated appearance. In cases of long standing, the changes wrought are of course greater than those of more brief existence; and, where suppuration has been long in progress, the transformations are more marked than where the affection has passed into the chronic condition and been continued without suppuration. In the former case, indeed, the entire gland is sometimes destroyed, leaving a mere vestige of the former organ, consisting of "a disorganized, pasty mass, into which the remains of the blood vessels and excretory tube may be seen to run in the form of fibrous cords."—(*Wood.*) In other cases ulcers are found in various stages of progress. Other changes, such as fistulous passages in various directions, consolidation of adjacent structure with the substance of the kidney, and the peculiar appearances common to chronic inflammation, which it is unnecessary farther to specify, may attract observation.

The *causes* of nephritis are various and sometimes obscure. It is most frequently the result of mechanical injury, such as the irritation produced by urinary calculi in the pelvis, in one or more of the calyces, or in the ureter; wounds by penetrating instruments or gunshots; or bruises caused by falls or blows. Injuries, of the kind just mentioned, may be sufficient to produce the disease under any ordinary circumstances. In other words they may be both predisposing and exciting causes. Other circumstances may be mentioned which will be sufficient to excite renal inflammation, if there is an existing predisposition to the affection: such as hard horseback riding; or being severely jolted in a carriage on a rough road, similar to our western "*corduroy*;" sudden

exposure to atmospheric changes; the use of spirits turpentine and other irritating diuretics, etc.

Gouty and rheumatic affections are supposed occasionally to produce this disease, and it is said that the sudden retrocession of cutaneous eruptions have sometimes developed inflammation of the kidneys, and I have no doubt this may be the case where there is a predisposition to renal disease. Inflammation may also be propagated by continuous sympathy from the bladder and ureters to the kidneys. Nephritis is also not unfrequently attendant upon inflammatory disease in other organs, upon badly managed malarial fevers, and, it may be, upon typhoid fever also.

There can be no doubt that some persons are much more liable to this affection than others. This predisposition may be acquired by the individual, or it may be derived by inheritance. It is more frequent in childhood than after puberty and during middle life; but old age is the period in which the strongest predisposition generally exists. A vast majority of patients with this disease are persons past the meridian of life.

The *treatment* of nephritis will, of course, depend very greatly on the cause, on the condition of the general system, and on the progress of the local disease. If the exciting cause is still operating to keep up the disease, it must, if practicable, be removed or counteracted. But, simultaneously with measures for this purpose, others may be employed to fulfill concurrent indications. If there is a loaded condition of the bowels, and especially of the colon, no measure will have a more salutary effect on the inflammatory action, than an efficient and thorough cathartic. There is, perhaps, no disease where the beneficial influence of the proper kind of purgatives is more manifest in practice, or more easily explained by philosophical principles, than in inflammation of the kidneys. They remove oppressive obstructions from the system, and exert both a depletory and revulsive influence.

Whatever the cause of the disease, then, inquiry should be made into the condition of the bowels, and if they are consti-

revulsive influence. These measures can all be employed while you are waiting for the operation of the cathartic.

Where the disease has been produced by *cold* or *exposure*, the foregoing treatment, accompanied and followed by diaphoretic measures, to the extent of producing and sustaining for some time a free *perspiration*, will generally be sufficient to relieve the case. As a medicine adapted to fulfill this last indication, and at the same time exert a soothing, anodyne influence on the system, our *sudorific tincture* is, perhaps, the best article you can employ. The diaphoretic powder might do in some cases, but it is objectionable because it contains the supertartrate of potassa, which is a stimulant diuretic. Another valuable article is the *althea officinalis*, which every physician should have growing in his garden or neighborhood. It is a soothing, mucilaginous diuretic, and I regard it as of great value in diseases of the urinary organs.

If the inflammation has been caused by the use of *spirits of turpentine* or any other *irritating diuretic*, its use must, of course, be suspended at once. Medicine of a soothing character will be required in this case, and the *althea officinalis* will be sufficient. In case, however, this cannot be obtained, an infusion of mullein and flaxseed, or any other emollient, mucilaginous diuretic, may be employed. Such mild remedies, in addition to the measures already recommended for the reduction of inflammation in these organs, are the means to be relied upon where the disease results from this cause.

If it has been caused by mechanical injury, the use of cups, fomentations and cataplasms, and such medicines as will keep the bowels in a soluble condition, will generally afford relief.

If it has been produced by urinary calculi, the measures already mentioned will be equally applicable. The sudorific tincture will be especially useful, for its anodyne and diaphoretic influence, and the use of diluent and mucilaginous drinks will greatly tend to soothe the irritation of the urinary mucous membrane. The bi-carbonate of soda is of great service in this case, especially where there is the brickdust

patient, and vary your prescriptions accordingly; but the general rule is, having started right in your treatment, persevere until your object is accomplished.

As the symptoms decline, use more freely the mucilaginous diuretic drinks. The diet, which of course is very light during the active progress of the disease, must not be too soon exchanged for stimulating food. It should still be mild, and of the mucilaginous or farinaceous quality, until all symptoms of local irritation are removed, when a return to a more generous regimen may be gradually permitted.

CHRONIC NEPHRITIS.

Chronic inflammation of the kidneys often results from the imperfect subsidence of an acute attack. It occasionally occurs, also, as an original affection, resulting, probably, from the irritating quality of the urine in some conditions of the system.

Symptoms. But little febrile or other symptoms of constitutional disturbance usually attend this form of the disease, the symptoms being mostly of a merely local character, connected with the peculiar derangement of the urinary secretion. There is often a little tenderness, and usually a dull, heavy pain in the region of the kidneys. In severe and protracted cases the pulse is irritable, but usually small and debilitated. The urine is decidedly diminished in quantity and essentially deranged in quality, possessing an acrid and irritating character, as manifested by frequent calls for its evacuation. It may in some instances have a clear appearance when first discharged, but upon standing it deposits sediment varying in different cases. The sediment may consist chiefly of elements natural to the urine in health, but existing now in excess; or of substances resulting from inflammatory action or a state of great irritation. But, generally, the urine has a turbid appearance when first discharged. It is nearly always alkaline in its properties, as in the phosphatic diathesis, the deposits consisting, for the most part, of phosphate of lime, and phosphate of ammonia and magnesia. Ammonia

depress the nervous system, and consequently destroy the constitution. In most cases, the restorative gin bitters (Bone's bitters) will be an excellent prescription; for in it we have not only an efficient *diuretic*, but a stimulant to all the secretory organs and a very valuable tonic.

Other remedies have been found useful, which it may be well to mention. The *arbutus uva ursi* is a valuable diuretic, astringent and tonic, and admirably adapted to cases of debility and intestinal relaxation, which are sometimes associated with chronic inflammation of the kidneys. The *rhochelia virginiana* is diuretic, tonic, and mucilaginous; properties which admirably adapt it to many cases of this affection. It should be given in infusion, two or three times a day.

Where there is a very low grade of inflammatory action in the kidneys, or where slow, corroding ulcers are believed to exist, the *balsam of copaiva* is of great benefit. It may be combined with spirits of turpentine, but in this way it must be administered with great caution, for the combination may prove too stimulating, and produce irritation of the kidney and bladder. So that, although an excellent prescription where a stimulant diuretic is indicated, its effects are to be very carefully watched. I have employed the same agent with advantage in ulceration of the bowels. The *muriated tincture of iron*, also, is very useful in this disease where it can be borne. It acts as a stimulant diuretic, increases the red globules of the blood, and exerts a general tonic influence.

As soon as proper activity of the kidneys is produced, the stimulating diuretics should be suspended, and those of a mucilaginous character substituted. Here the marsh mallows, or *althea officinalis*, will be adapted to the case. A decoction of mullein and flaxseed will also answer a good purpose. In short, any of our demulcent diuretics may be employed in infusion, the object being to soothe the urinary passages, and diminish the irritating properties of the urine by dilution.

Where the case is of some standing, it may be necessary to establish efficient and protracted counter-irritation. This may be done by inserting an *issue* in the region of the kidneys. The same thing may also be accomplished by our *irritating*

LECTURE LXI.

CYSTITIS—INFLAMMATION OF THE BLADDER.

Acute form — Symptoms — Extension of the inflammation — Febrile reaction — Post mortem — Diagnosis — Prognosis — Causes — Treatment — Chronic form — Frequency — Symptoms — Prognosis — Post mortem — Causes — Treatment.

The bladder, like other organs, is subject to both *acute* and *chronic* inflammation. The two forms of the disease in this organ are, perhaps, sufficiently distinct to require a separate consideration.

ACUTE CYSTITIS.

In acute inflammation of the bladder, all parts of the organ may be involved at the same time, or the inflammation may be confined to a particular part. Thus the neck of the bladder alone may be affected, causing strangury ; or the disease may be located at the entrance of the ureters, producing renal retention of the urine. It may also attack primarily one particular tissue of the bladder, as the mucous membrane, the muscular, or the partial peritoneal coat, but it is not probable that one of these structures is ever actively diseased very long without the others becoming involved. Except in peritonitis, however, which has already been described, the mucous membrane is usually the principal seat of the inflammatory action in the early stage, and most of the symptoms to be described are dependent on disease of that membrane.

The *symptoms* of acute cystitis are generally distinct and urgent. It is not usually introduced by so active symptoms as inflammation in some other organs, such as chill, fever, etc., though these are sometimes the first symptoms. The disease

region, indicate that the neck of the cyst is the principal seat of disease.

The *prognosis* in an ordinary case is, that it will subside spontaneously, or, under mild treatment, in a short time ; but where the attack is severe, with the active febrile and nervous symptoms I have described, the case will probably have a fatal issue in from one to two weeks, unless arrested by very prompt treatment.

A very few words will suffice upon the *causes* of acute cystitis. The disease most frequently arises from mechanical injuries, as wounds, bruises, stone in the bladder, the use of the catheter in a careless manner, injury during parturition, etc. It is sometimes caused by irritating injections thrown into the bladder, by the action of unhealthy urine, and by irritating diuretics, as turpentine, cantharides, etc. Sudden exposure to cold, if there is predisposition, may produce it. It sometimes appears to result from metastasis of gout or rheumatism, and occasionally follows the retrocession of a cutaneous eruption. Cystitis may result also from sympathy of the bladder with other organs in a state of inflammation, as the uterus, rectum, kidneys, etc.

In the *treatment* of acute cystitis your measures should be efficient, and promptly applied.

The great suffering attendant on the disease presents, to the sympathizing physician, a strong motive for affording immediate relief, even if no danger attended the case. But there is often much mischief to be apprehended from allowing the inflammation to progress ; not only in the local injuries resulting from the diseased action, but from the constitutional impression which the affection is likely to produce by the symptomatic fever, by retention of the urine, by interference with its secretion should the kidneys become implicated, etc. A very short delay, in some cases, is sufficient to place the disease beyond the reach of remedies.

The first point to be considered is the cause. If it has resulted from cold, the leading indications are to restore the circulation to an equilibrium and induce free perspiration. ^g If it has been caused by the irritating qualities of the urine, _{si}

the character of that secretion should be changed by mild, diluent, mucilaginous diuretics. But in most cases it will be important to evacuate the stomach and bowels in the commencement, which will prepare the way for, and increase the efficiency of, other means. As a cathartic, our *antibilious physic*, combined with *cream of tartar*, should be administered, being quick and thorough in its operation, and exerting a powerful revulsive influence. Diaphoretics should not generally be given until the cathartic shall have operated sufficiently; but, in the mean time, hot fomentations of bitter herbs should be applied over the hypogastrium and to the perineum. A better measure, still, is to seat the patient over a tub containing a hot decoction of bitter herbs, until a free perspiration is produced.

If the case is urgent, from the rapid progress of the disease, I would advise the application of cups to the perineum, to the hypogastrium and even to the sacrum. This should be followed immediately by hot fomentations.

After the operation of the cathartic, the patient should be put under the influence of the *diaphoretic powder* with a view of allaying spasmodic irritability of the system, and promoting activity of the skin. A large *onion* poultice to the perineum and hypogastrium, should be applied after the hot fomentations, and changed several times a day. If this is not convenient, a fomentation of *hops*, changed frequently, may be substituted. At the same time a tea of the *althæa officinalis* should be freely used with a view to its soothing, demulcent, diuretic influence. This is an agent which will usually be agreeable to the stomach, and should never be omitted. I know of nothing that would answer the purpose so well.

The course now directed, I venture to predict, will generally prove successful. If the symptoms do not yield at once, repeat such of the measures as appear to be indicated. If complications occur, they must be treated upon the principles involved in each case. For tenesmus, if urgent, mucilaginous injections with laudanum should be administered.

If the attack has resulted from a translation of gout or

rheumatism, measures should be employed, in addition to those already advised, with reference to the original affection. Counter-irritation along the spinal column, by cups and sinapisms, will be proper in such a case. Where it follows the retrocession of a cutaneous eruption, an active vesicant, as the croton oil, should be applied to the perineum, hypogastrium and sacrum, for the purpose of imitating the cutaneous affection, and thus diverting the disease to the surface.

The diet must of course be of the mildest kind during the existence of inflammatory excitement. In the advanced stage, especially where suppuration is going on, and during convalescence, the food should be nourishing, and, in case of necessity, the appetite may be promoted by the use of tonics, such as the *staphylea trifolia*, *hydrastis canadensis*, and in some cases ale or porter.

CHRONIC CYSTITIS—CHRONIC MUCOUS INFLAMMATION OF THE BLADDER—CYSTIRRHEA—CATARRH OF THE BLADDER.

This form of cystitis is perhaps more frequent in occurrence than the acute; it has certainly proved to be so in my experience. It is characterized much more by *local* than by *general symptoms*, and the character of the urine, and the pain attendant on its discharge, are the chief diagnostic phenomena of the affection.

The urine is more likely to contain mucus in this than in the acute form of the disease, and the quantity of that substance discharged with the urine, in protracted cases, is sometimes very great, amounting, it is said, to several pints daily. The mucus may not, in recent cases, be sufficient to change the appearance of the urine as discharged, but it will separate in some measure on cooling. As the disease progresses, the mucus discharge increases, and the urine becomes quite turbid, but when allowed to stand the mucus will subside and leave the urine clear. In advanced cases, *pus* is not unfrequently mixed with the mucus, and, in some cases, a small quantity of blood will occasionally terminate the discharge,

being forced from the irritated mucous surface by the contraction of the detrusor muscle.

A very common symptom is a frequent inclination to urinate, and difficulty in retaining the urine in the bladder, owing to the stimulating influence of the urine upon the irritated mucous membrane. Where the kidneys are not affected, the usual quantity of urine will be secreted, and the irritated condition of the cyst renders its presence very painful ; and hence there is a desire to void it as fast as received from the ureters. Where there is less morbid sensibility the calls for micturition will be less frequent, yet more so than in health ; and each effort of the kind is accompanied by a burning pain in the urethra and a spasmodic contraction of the bladder.

There is, generally, constant uneasiness in the region of the bladder, a sense of heat and, usually, of debility ; often a feeling of weight in the perineum, and weakness in the loins, and irritation of the rectum. In the female the uterus and vagina will be affected, more or less, as evinced by a leucorrhœal discharge.

Where the disease has the chronic form from the beginning, which is by no means uncommon, there is, in its early course, but little constitutional disturbance. Usually there will be slight fever, as indicated by some excitement of the pulse, a slight fur on the tongue, and dryness and perhaps heat of the skin. But if the local difficulty advances and the surrounding organs sympathize, the renal and other secretions will be impaired ; the general health undermined ; general debility and emaciation will be produced ; and the patient may sink into a nervous, hectic condition, from which death alone can relieve him.

But, although death may be the consequence of chronic cystitis, as just described, yet the general *prognosis* is not unfavorable. The general tendency of the affection is to yield to appropriate treatment, if applied before irreparable organic or constitutional injury has been inflicted. Strong predisposition to disease of the bladder renders the cure more difficult, and less permanent, and some cases, having little tendency to impair the general health, have been known to

continue for years, giving the patient constant distress. Considerable structural lesion of the bladder may occur and the disease be arrested at last. The discharge of pus with the urine must of course weaken the favorable prognosis, but is by no means inconsistent with final recovery. Gangrene, however, is necessarily fatal.

The *post mortem appearances* are such as would reasonably be anticipated upon observation of the symptoms. Death is caused by this disease only after long continued lesion, and of course anatomical changes might be expected, in accordance with the duration and activity of the local affection. The mucous membrane may exhibit patches of a dark red or livid color; it may be softened, ulcerated, or disorganized to a greater or less extent. It is often thrown into folds, or rugæ, in consequence of permanent contraction of the muscular coat, and, if calculi are present, they may be found in a sac or furrow formed by the mucous membrane. Of course the surrounding structures and associated organs will indicate the extent to which they have been involved in the organic lesion.

Causes. Chronic cystitis often succeeds the acute disease, and may therefore result from the same causes. Those causes may even produce the chronic affection without an acute attack, where their operation is milder, or the constitution less predisposed to active inflammation. It is however, the result in most cases of a predisposition, either inherited, or brought on by disease or improper habits. Thus either the scrofulous, gouty, or rheumatic diathesis may be a predisposing cause. The long continued habit of using alcoholic liquors, or of indulging in excessive eating, and in the use of high seasoned food together with sedentary and indolent habits of life, may produce the predisposition. It may be produced by a diseased condition of the kidneys, or it may result from disease in the urethra, prostate, female organs of generation, or the rectum. Excessive venery may be both a predisposing and exciting cause.

In the *treatment* two main objects are to be had in view. The first is the removal and prevention of all irritating influ-

ences which may keep up the difficulty ; the second to prompt and assist nature to produce healthy action. It will, therefore, be necessary to modify the irritating properties of the urine, remove accumulations from the bowels, draw off the water from the bladder if necessary, and as far as possible procure and preserve a calm condition of the whole system. The patient must, of course, avoid exposure to cold, excessive fatigue, and all other causes calculated to produce local determination.

The measures to be employed will be both general and local. As general remedies, such agents may be used as have a direct tendency to affect the urinary organs in a favorable manner, and others also, which, while they have no specific relation to those organs, may ameliorate the condition of others, and of the general system, and thus assist in the cure. But the treatment will have to be moderate in its character, and patiently protracted, until a gradual recovery is brought about. It is vain to make as much effort to hasten the favorable result as may be done in acute disease; your management must rather be of the expectant character. It will be found necessary also in a course of treatment for this, as well as other chronic affections, to alternate the remedies occasionally ; for when a particular agent is employed for some time the system becomes inured to it, and then little benefit is derived from its use.

Among the remedies which have been employed in chronic inflammation of the bladder, *buchu* or *diosma* has acquired a favorable reputation. I have used it with very good effects in many cases. *Uva ursi*, given in small doses, exerts a favorable diuretic influence combined with its tonic and astringent effects, and is highly useful in cases of debility and relaxation. The demulcent diuretics also are always indicated, and may be combined with the foregoing or alternated with them. One of the best of these is the marsh mallows (*althea officinalis*) of which I have so frequently spoken. An infusion of *mullein* and *flax-seed* will also answer a good purpose. The infusion of the leaves or bark of the *peach* tree, given freely, is decidedly diuretic, sensibly tonic

believed to act sometimes as a mild aperient, and I have often found much benefit from its use in these cases.

If the patient is dyspeptic and debilitated, mild tonics and aperients should be given. Perhaps no prescription will more fully meet the indications of the case, under such circumstances, than the *gin* or *Bone's bitters*. Even the stimulating effects of the gin will not be objectionable in these slow forms of chronic inflammation. We often see old ulcers on the surface induced to heal by the application of active stimulants, and I can readily conceive how a stimulant taken into the system may exert a beneficial influence on a tardy local disease of this character. Such, at least, I have often found to be the effect of using these bitters. The use of this or other stimulants must not, however, be too long continued, for though they may act favorably for a while, if their full influence is continued it may prove injurious by exciting active inflammation.

Local measures are also of much importance in the treatment of chronic cystitis. Counter-irritation should be made in the perineum and over the pubes. Where the neck of the bladder is the seat of disease, an irritating application to the perineum will be of special service. This may be effected by producing an issue with caustic potash, from which a constant discharge may be kept up. The same may be done above the pubes, or the compound tar plaster may be applied there. This, if preferred to an issue, may also be applied in the perineum, or near it, on the inner side of the thighs. Much good may sometimes be accomplished by the judicious employment of injections thrown into the bladder. The decoction of marsh mallows, or of flaxseed, barley water, or other mucilaginous, soothing fluids, may be carefully injected into the bladder through a common catheter by means of a small syringe. The infusion of *hydrastis canadensis* or *yellow puccoon*, which seems to exert a beneficial influence upon all irritated mucous surfaces, has been injected into the bladder with manifest advantage. It may become necessary, after using these mild injections, to employ one of more positive character, especially if there is reason to believe that ulcers exist in the cyst. A solution of nitrate of silver, say four or

six grains to the fluid ounce of rain-water, may be thrown into the bladder once a day, or every second day, and allowed to remain a minute or two. Just before using this, the bladder should be washed out with warm rain-water. The strength of the injection may be gradually increased as the patient appears able to bear it without much pain. If too much stimulation should follow its use, return for a time to the mucilaginous injections.

Where there is a gouty or rheumatic condition, the treatment should be directed to its removal. Counter-irritation along the spine, and general alterative treatment, should be employed. Alteratives will also be necessary where there is a scrofulous diathesis, and where there is a venereal taint in the constitution. The *wine of colchicum*, for gout or rheumatism, has acquired some reputation. As a common alterative, our *alterative* syrup, or the compound syrup of stillingia may be used. The iodide of potassa may be added to either of these syrups for the scrofulous and syphilitic condition.

The *diet* should be nutritious but simple, consisting principally of mucilaginous and farinaceous food, with small quantities of boiled or rare-cooked animal food, where there is not much inflammatory excitement.

LECTURE LXII.

BRIGHT'S DISEASE—ALBUMINURIA, OR ALBUMINOUS NEPHRITIS.

Synonyms — Acute and chronic forms — Nature of the local difficulty — Symptoms, general and diagnostic — Post mortem — Causes — Prognosis — Treatment.

The title, BRIGHT'S DISEASE, by which the renal affection, next to be considered, is now generally known, is attached to it in honor of Dr. Bright, of London, who first described it, with some degree of distinctness, in 1827. It has since been the subject of considerable research both in Europe and this country, and other names have been proposed for the malady, expressive of the peculiar views of its nature or characteristic phenomena, entertained by the authors proposing them. *Albuminuria*, as denoting the presence of albumen in the urine; *albuminous nephritis*, intimating that it is an inflammatory condition of the kidney distinguished by albuminous urine; and *granular degeneration of the kidneys*, expressive of the morbid condition to which the organs are reduced by the disease—have all been employed, and may be regarded as synonyms of the term *Bright's disease*, by which I shall generally designate the disorder. The nature of the affection is confessedly a matter of doubt and obscurity among authors, and hence no term significant of its pathological character should be employed, until that character shall have been settled.

From my own observations and experience in this form of renal disease, as well as from the points of agreement in regard to its character found in the authorities which have fallen within my range of reading, I am well convinced that

the most important point connected with the disease has been entirely overlooked. But more of this presently.

This disease is said to be presented in the two forms, *acute* and *chronic*; but not only is the line of division between the two, altogether indefinite, but the leading characteristics of the disease are so nearly identical, in the two cases, that the distinction cannot be of any advantage. The febrile excitement attendant upon the acute form, so called, does not appear to depend upon any greater activity in the local disease, but upon the greater degree in which the general system sympathizes with the diseased organ. Exacerbations of this acute character occur even in protracted chronic cases, when anything occurs to increase the general sensibility. Or inflammatory symptoms may be superinduced upon those of Bright's disease proper, and thus give it the appearance of an acute attack. In short, I am perfectly satisfied that the only difference between the symptoms observable in different cases, may always be referred to the stage of the disease, to peculiarity of constitution in the patient, or to some associated affection. I have seen equal variety of general symptoms in cases of membranous croup, where there is never any acute local disease; and I believe the last mentioned disease and the one we are now considering, both depend upon a peculiar mode of local irritation, short of inflammation. Inflammatory symptoms occasionally accompany these forms of disease, and some of the authorities regard them as essentially inflammatory in their nature; but I have found so large a proportion of cases, both in Bright's disease and in membranous croup, lacking in all symptoms of febrile excitement, that I must consider the cases, in which such excitement is present, as exceptions to the general rule, and the reaction as attributable to some cause besides the local irritation, in either case.

The *peculiar symptom* of Bright's disease is admitted to consist in the albuminous effusion found in the urine, with a few general symptoms necessarily resulting from the condition of the organs thus affected. Dr. Wood says: "Should the urine be scanty, highly albuminous, and little reduced in specific gravity, and should the patient be at the same time

febrile, it may be taken for granted that he is laboring under an acute attack, or is in the early stage of Bright's disease. When the urine, whether scanty or otherwise, is moderately albuminous, or though free from albumen at times, is generally contaminated with it, and when, at the same time, its specific gravity is considerably and steadily diminished, there can be little doubt of the existence of the disease in the chronic form."

The only marked difference according to Dr. W.'s diagnosis, between the acute and chronic forms, consists in the "febrile" condition in the former, which is absent in the latter, and the leading or essential symptom in both is the albuminous urine, with the attendant diminution of specific gravity of that fluid below the standard of health. Taking Dr. W.'s description then as correct, it is a sufficient confirmation of the statement just made in regard to the peculiar characteristics of this affection.

The only question then that remains to be considered, is this: What is the *nature of the local difficulty* in the kidneys, of which this albuminous urine is the prominent symptom? Is it inflammation, either acute or chronic? In answer to this question, I reply that this symptom is **not** associated with inflammation of the kidneys ordinarily, nor indeed with any other affection of those organs, as a usual symptom, except the one before us. So that, if this is an inflammatory affection, it differs in a remarkable circumstance from that form of disease as it usually occurs. This fact is indeed noticed by Dr. Wood, for he says, "the difference between this and the ordinary inflammation of the kidneys appears to be,"—not only "*appears* to be," but *is*, he should have said,—"*that*, in the peculiar constitution attending Bright's disease, the vessels throw out the yellowish matter characteristic of that complaint, instead of serum, coagulable lymph, and pus." But not only do the symptoms of ordinary acute and chronic inflammation thus essentially differ from Bright's disease, but the anatomical characters of the two morbid conditions are equally diverse. Inflammation either wastes the substance of the kidney by suppuration or ulceration, or indurates it by

the ordinary process of adhesion ; but in Bright's disease the renal substance is absorbed to make room for a yellowish granular deposit; which may afterward be itself absorbed, leaving the organ almost obliterated.

The opinion, to which I have been led by my own observations of the disease itself, and my reflections on the leading points presented by different authors, is, that Bright's disease consists in a grade of irritation of the renal substance, not amounting to inflammation, but sufficient to derange and partially suspend the proper function of the kidneys, and produce a gradual alteration of their structure. The albuminous matter found in the urine, is in my view, a mere effusion caused by irritation, washed off from the mucons surface and brought away by the urine, but forming no part of that fluid as secreted. The inorganic granular substances, which post mortem examinations show to be characteristic results of this disease, consist, I have no doubt, of inspissated albumen, which, not being washed away by the urine, accumulates in the malpighian bodies, distending them, and thus, by pressure upon the surrounding capillary plexure of blood vessels, producing passive congestion. This pressure being continued and increased as the effusion enlarges the granular deposit, the cortical structure of the kidney is absorbed, as all the tissues are under constant pressure, and in this way, doubtless, the degeneration of the gland is effected.

These views are rendered probable, and indeed satisfactory to my mind, from various considerations :

First, From the fact, that nearly all authors agree that Bright's disease is not an inflammatory one, as it neither develops the symptoms of inflammation during its progress, nor exhibits the pathological results of inflammatory action, upon dissection.

Secondly, The anatomical appearances do indicate morbid action closely allied to inflammation, but not identical with it; not, indeed, passing the boundary of a low grade of irritation, and probably preceded or associated with a condition of the system favorable to its development and continuance. The results of this morbid action are, it is admitted,

destruction, finally, of the structure involved, and the production of a new substance in its place, yet this new epigenetic formation has not the character of organized tissue, and therefore lacks the principle of vitality. It is not therefore a growth such as results from adhesive inflammation, but must be referred to another formative process, that of mere aggregation.

Thirdly, The albuminous matter found in the urine is not one of the elements of that fluid in health; unless it can be found in the very small amount of animal matter which the urine contains. But, as I said on a former occasion, I do not remember an instance, where it has ever been shown that a secreting surface, in a state of disease, produced a secretion composed of elements differing entirely from those found in the natural product of the organ in health. I therefore conclude that the albumen which constitutes the main *characteristic* of this disease, is not a product of urinary secretion, but of an exosmose, resulting from the relaxed state of the diseased tissues. Whether the albumen discharged with the urine is derived from the fibrin in the blood—as albumen in some conditions of the system is converted into fibrin—or whether it is an epigenesis from other elements cannot be readily determined. It is certain, however, that the fibrin of the blood is constantly diminished during the progress of this disease; and that the serum is increased far beyond its normal proportion. The consequence is, an effusion of serum into the cellular tissue, constituting a kind of inflammatory dropsy. There is, furthermore, strong reason to believe, that an excess of albumen exists in the blood of persons strongly predisposed to this affection. In scarletina, for instance, albumen certainly forms more than its due proportion of the blood; and that disorder leaves the system predisposed for a time to Bright's disease. It is worthy of note, also, in this connection, that membranous croup often follows scarlet fever.

Fourthly, The slow and almost imperceptible approach of this disease, usually, and the very gradual manner in which the changes in the condition of the urine and the blood take place, confirm the opinion I have expressed, that the char-

acter of this morbid action is that of a low grade of irritation. The reason why similar results do not follow irritation in other organs, may be found in the fact, that no other organ possesses the peculiar organization of the renal glands.

These are the main points which sustain my theory of Bright's disease, and all the *facts* recorded in the books in regard to it, when isolated from the theories stated in connection with them, strongly confirm my mind in the views which personal observation and experience have suggested.

For the purpose of enabling you more perfectly to comprehend this disease in its different phases, I will now describe the leading symptoms connected with it in its progress, and the condition of the diseased organ as developed by post mortem observations.

Symptoms.—As was stated in the outset, no advantage can be gained by considering Bright's disease as occurring in two forms; acute and chronic. Dr. Wood, who recognizes the acute form, says, while speaking of the chronic: "though occasionally preceded by the acute form, this has much more frequently its characteristic grade from the commencement." This is undoubtedly the fact; and whatever symptoms of local inflammation and of general excitement may occasionally occur, either in the commencement, or at any period of its progress, they do not in my opinion constitute features of this disease. They are merely symptoms of associated local disease, or of a peculiarly irritable condition of the system. I shall not therefore describe two forms of Bright's disease.

The early symptoms of this affection, where it occurs unconnected with some acute disease, are intangible and obscure. The patient may not have observed any evidences of indisposition until his attention is arrested by an edematous swelling of the face, or some other portion of the system. But when this or some other circumstance leads him to consult a physician, the interrogatories of the latter will bring to his memory a train of symptoms which, having appeared very trivial, had scarcely attracted his notice. He now remembers, perhaps, that he has experienced for some time a vague uneasiness and sense of weakness in the loins, on one or both sides, and, it

may be, that the urinary secretion has been somewhat diminished, and that it has sometimes appeared to be somewhat turbid. Upon examining further, you find, probably, some tenderness under firm pressure over the kidneys. The urine, when allowed to stand a short time, presents a substance of darker color and more consistent than the fluid itself, floating within it, and sometimes a thin, slightly oily pellicle in the surface. The edematous appearance continues to spread and increase, while the urine becomes gradually diminished in quantity, and also in specific gravity.

With these evidences of local disorder, you may soon observe those that indicate some degree of general derangement. Indeed, the edema already mentioned is a symptom of this character, but others shortly follow, such as dry skin, more or less thirst, inactivity of the bowels, a moderate excitement of the pulse, and a feeling of general debility and disease. Associated with the symptoms just enumerated will be frequent nausea and sometimes vomiting, with more or less drowsiness. The appearance of the patient is that of general disease; the skin is pale and anemic, and the face and surface generally presents a bloated aspect. This anemic, dropsical condition, and the albumen in the urine, taken together constitute the most unequivocal evidences of the disease. Along with this bloodless appearance of the patient, a general relaxation of the tissues exists, as evinced by the soft, flabby state of the muscles, and by general emaciation, showing a want of healthy assimilation, as well as a degeneration of the vital forces.

The febrile symptoms that are so often found associated with this disease, are referable, as has been said, to some local inflammation, either in the kidneys or other organs, and is produced, no doubt by the predomination in the blood of those elements which circulate with great difficulty in the capillary vessels, and which consequently, as shown by universal observation, tend to produce local engorgement.

The diminution of the urinary secretion usually keeps pace with the local disorganization going on in the renal substance, so that, as the disease advances, this secretion becomes more

and more scanty until a total suppression occurs ; thus leaving in the circulating fluid a large amount of morbid, excrementitious matter, some elements of which are positively poisonous to the nervous system. These are probably the main influences concerned in producing the comatose condition which is apt to ensue upon the arrest of the urinary secretion. Effusion into the ventricles of the brain would have a similar effect, and as post mortem examinations show this to have taken place sometimes, there can be but little doubt that where it occurs it has something to do in developing the cerebral symptoms.

From what has already been said, you will have little if any difficulty in appreciating the variously modified symptoms which may occur in different constitutions, and in tracing in your imagination the progress of a case to its final result. I shall therefore dismiss the consideration of the symptoms and course of the malady during life, and briefly call your attention to the developments of its pathological anatomy.

In describing the *post mortem* appearances, I shall not dwell upon the associated morbid conditions of other organs, such as the liver, stomach, lungs, heart, brain, etc., any one or more of these may have become accidentally involved, or have been predisposed to sympathise with the diseased kidneys. But whatever may have been the cause or extent of disease in any of these organs, the autopsy will present such phenomena as might be expected from such an affection of the organ involved. They are not post mortem symptoms of Bright's disease, though they may have resulted from other local affections produced by it. We will, therefore, confine our attention, if you please, to the morbid remains of the disease as presented in the organs believed to be the special seat of the primary difficulty.

Where death has resulted from any cause during the early stages of this affection, the kidney is in a state of congestion and great relaxation ; in some instances being increased in weight and volume to several times its natural size. This increase is principally owing to the vascular engorgement which is apparent in the vessels ramifying throughout the

inner surface and solid structure. Even slight ecchymosis is often seen in spots on the inner surface. The cortical portion, however, appears to be the seat of the greatest morbid action, as it often exhibits two or three times its ordinary thickness. Along with these evidences of sanguineous engorgement, may be observed a granular matter deposited through the substance of the kidney, and this appears to increase as the disease advances. This new product is shown to be an inorganised deposit, as the finest injections have not been made to enter it. It must therefore be regarded as a mere exudation and not a secretion.

The appearance of the kidney however, in different cases of this disease, is by no means uniform. It is sometimes but slightly enlarged or not at all; sometimes indeed greatly diminished in size, with but little left of its original character. In some instances the whole cortical structure has changed from a reddish-brown, its natural color, to yellowish, while the tubular portion retains its healthy condition, thus presenting a very striking contrast between the states of the two structures.

This granulated matter is sometimes deposited in small particles throughout the cortical portion, while the intervening substance is engorged with blood. In other cases, however, the granulated substance is found deposited in homogeneous masses to such an extent as to occupy the entire place of the renal structure. Again, in the more protracted cases, after the structure of the kidney has been removed by absorption, under the influence of the pressure of the deposit, leaving the latter to occupy its place, the absorbents of surrounding tissues act upon this deposit, until the greater part is disposed of, and little of the kidney is left except its capsule and membranous tissue.

Causes. From what has been said, it will be readily inferred that the predisposing causes of this disease are to be sought for in influences calculated to produce a vitiated state of the blood; and the concurrent observations of nearly all who have written on the subject refer to a peculiar condition of the circulating fluid as necessary to its development.

Hence the disease is usually found in systems which have been exhausted and contaminated by debauchery and intemperance, or greatly debilitated by severe or protracted disease, and in whose blood there is a deficiency of the more vital elements, and a superabundance of the serous and albuminous portions.

It has been observed in a few instances associated with tuberculous affections, and it is thought by some that the scrofulous habit is really a predisposition to Bright's disease. This is rendered probable by the well known condition of the blood in such constitutions ; still it would require some immediately exciting cause, capable of determining the irritative action to the kidneys, to develop this particular form of disease. It has also been recognized frequently in dropsical affections which so often follow scarlet fever. In this case, too, the condition of the blood is usually highly favorable to the production of the disease we are considering. The influence of mercury on the system has also been mentioned as a predisposing cause. But whatever may have been the causes which have produced this predisposition in the condition of the blood, the actual development of the renal affection requires some exciting cause capable of producing irritation in the kidneys. Such causes are numerous. Exposure to cold, by checking the activity of the skin, and thus throwing extra labor upon the urinary function, may be sufficient to produce the disease, where there is a predisposition to it. The use of spirits of turpentine or cantharides, whether taken internally or applied externally, might have the same effect by its irritant diuretic influence. The rather unfrequent occurrence of the malady, especially since the attention of the profession has been particularly directed to it, is a reason for the comparative obscurity which still envelops the cause of Bright's disease.

The *prognosis* in this affection is regarded by authors as generally unfavorable; and my limited experience in this disease will not, of course, enable me to speak with very great certainty. Yet the few cases which have come under my observation, and in which I have had an opportunity to

the effect of medicine, and thus to study more thoroughly the nature of the disease, have impressed my mind with a more hopeful prognostication than seems to be authorized in the books. It was by these personal observations, also, that those peculiar views of the character of the morbid action were suggested to my mind, which I have endeavored to elucidate in this lecture. Two out of every three cases, which it has been my lot to treat, have terminated favorably; and I merely remark that if this forms any criterion on which to base an opinion as to the curability of Bright's disease, the more favorable prognosis which I have suggested has that sanction.

In the *treatment* of Bright's disease you should be governed by those general principles which I have been endeavoring to impress upon your minds, in relation to the philosophy of the morbid condition. Hence two leading indications present themselves as distinct and prominent in the case: First, to restore the blood to a healthy condition; secondly, to relieve the local irritation.

Fortunately, in the measures calculated to fulfill these two indications, there exists no incompatibility, forbidding their simultaneous exhibition. Even such local measures as good sense and experience alike recommend as well adapted to subdue the local irritation, will, at the same time, exert more or less influence in removing from the blood those elements capable of producing and keeping up the disease.

The application of *cups* with *scarification* over the seat of the disease, is a very efficient means of subduing the local irritation. For the purpose of making a decided impression on the disease in the early stage, the cups should be thoroughly applied, and repeated once or twice a week for a short time; and followed by a towel wet in cold water. This should be changed once in four or five hours, so as to keep up a constant evaporation. When the symptoms of more active irritation have been subdued, under these local means, and those of a general character to be mentioned presently, the application of an issue over the seat of the disease will be found a most important measure in the radical treatment. While it

acts as a drain to the morbid materials existing in the blood vessels, it has a no less important revulsive influence upon the local irritation. A remedy so readily applied, so easily borne by the patient, and withal so important in its influence over the disease to which it is applicable, ought not to be overlooked. It may be produced by the application of caustic potash, with little suffering, and when made can be continued with slight pain or inconvenience to the patient.

The *constitutional* measures to be used from the commencement of the treatment, are such as shall change the condition of the blood, and give tone and action to the system in general. As a remedy adapted to promote this object, the muriated tincture of iron, given in the form of a chalybeate *water*, made by mixing the tincture with a solution of the carbonate of soda, will be found highly valuable. Or it may be given with equally good effect, perhaps, in simple water, in doses of fifteen or twenty drops twice a day. The experience of the profession, generally, concurs in awarding to the chalybeates the property of increasing the red globules of the blood, and thereby fulfilling an important indication in all cases of an anemic condition. I have never found an aggravation of those symptoms, looked upon by the profession as semi-inflammatory, under the administration of this agent, or others of similar character ; but, on the contrary, it has always proved one of the most efficient means in promoting a speedy and permanent cure.

If the local disease has, associated with it, symptoms of periodic exacerbations, the sulphate of quinia and prussiate of iron, so often recommended in other diseases, will form an indispensable part of the treatment. These should be given to the extent of producing their specific effect before they should be discontinued. If time were important in the case, they might be administered at any stage, but the remission, which usually occurs in the morning, is the period to be preferred for their administration. They need not supercede the other remedies which have been or will be recommended.

Among the most important agents in the cure of Bright's disease, which I have employed, is a pill composed of

LECTURE LXIII.

DIURESIS.

Preliminary remarks—Definition—Excessive secretion, or Diabetes insipidus—Treatment—DIABETES MELLITUS—Description—Local and general symptoms—Condition of urine—Pathological Anatomy—Quotations—Prof. Tweedie—Prof. J. R. Buchanan—Causes—Prognosis—Treatment—Illustrated by cases.

Having discussed, in some previous lectures, the diseases connected with structural disorder of the urinary organs, and having, also, considered to some extent those affections of the urinary secretion termed urinary calculi, I desire to detain you, at the present time, with a few remarks upon subjects connected with abnormal urinary secretion.

It was formerly and is even now the custom, with some writers of the highest authority, to consider all excessive discharges of urine under the head of diabetes. But a more rigid adherence to the legitimate signification of terms has latterly restricted the term diabetes to that form of excessive urinary secretion in which saccharine matter is more or less extensively mixed, and has very properly distinguished the other modification, formerly considered under the head of *diabetes insipidus*, as a separate disease, which Dr. Wood terms

DIURESIS.

This term literally signifies *excessive* urinary secretion, and is therefore somewhat objectionable, as it might also strictly include diabetes mellitus. But with the explanation that diabetes proper is not intended to be thus embraced, I may expect to make myself understood.

Temporary excessive secretion of urine is a very frequent attendant upon various diseases, and is also observed in many instances where no symptoms of functional disturbance can elsewhere be found. Thus, during the cold stage of intermittent fever, a copious and limpid secretion of urine is a common attendant. The same thing occurs in various other diseases, especially during the convalescent state, and upon the free use of certain kinds of fruit and vegetables. But these are mere temporary aberrations, in which the secretion is simply diluted, though not deficient in the healthy constituents of that fluid, except in the excess of water, and is neither the cause nor the result of special abnormal action. On the contrary, it may generally be looked upon as a vicarious action of the kidneys in substituting the imperfect or deficient action of the skin, or some other natural depurating organ; or as a temporary increased effort of those glands, acting in concert with other secretory functions, for the purposes of general repair. These cases therefore should not be considered in the light of disease, but as indicative of healthful efforts toward restoration, or as perpetuating that state of the system.

This extraordinary secretion may, however, become so continuous as to affect the convenience of the individual, if indeed it does not conduce to other and more serious disorders, though no other abnormal state can be observed than a mere excess of urine. The condition of the system, in such cases, will not, at least for some time, suggest the existence of positive disease; but the long continued excessive action of any function must ultimately result in disease. For some time, the amount of urine discharged seems to correspond, in some measure, with the amount of fluids taken into the stomach, as such cases are mostly troubled with great thirst; and if the difficulty is not arrested, it will soon be followed by deficient action in the capillary circulation upon the surface, and by a diminution of the surface transpiration, with other indications of debility, and a gradual loss of healthy action generally. Slightly increased arterial action will soon be observed, with increased thirst, nervous irritability, and imperfect digestion. Up to this period it will generally be

regarded as a sensitive condition of the bladder merely, without any other disease; but by more careful investigation, the encroachment of disease will be clearly manifest, and the amount of urinary secretion far exceed the normal quantity.

The statements made by some writers of the amount daily evacuated almost challenges our credulity; but when compared with my own observations in one or two cases, and with one case of a child in particular, I am better prepared to credit the statements of others. I will not, however, consume your time by reviewing the book accounts of various extreme cases of the kind.

The term *diabetes insipidus* has been applied more especially to this form of diuresis from the fact, no doubt, that the urine mainly exhibits a pale and colorless appearance, with very little of the solid ingredients common to healthy urine—presenting a specific gravity little greater than pure water, without much taste or odor of any kind, but entirely wanting in the sweet taste characteristic of true diabetes.

Treatment. The treatment of these simple cases requires little more than abstinence from the usual indulgence in the use of fluids, especially water, and the regulation of the habits of the patient in other respects corresponding with the ordinary requirements of health, with the use of some moderate restoratives calculated to invigorate the general system. It may require no little self denial to restrain the demand for drinks to the extent required in these cases. But as long as the blood is kept diluted to that unnatural degree by the daily use of the enormous quantities of water which the demands of the stomach prompt the individual to take, it will be found impossible to divert this afflux of fluid through this important natural outlet, made morbid by continued habit in such cases, by any natural or vicarious action that may be excited in the skin or any other organs. It therefore becomes an imperious requirement that an individual thus affected restrict himself to the use of a small amount of drink, and at least not to indulge in the use of more than is ordinarily proper. In order to aid the resolution of a patient in abstaining from an indulgence generally harmless, the desire for w^t

these cases, so imperious and difficult to control, the diet should at first be directed to be of a simple and unstimulating character, avoiding highly seasoned and salt food, and especially salted animal food. The necessity for animal food does not exist in this form of excessive urinary discharge, as it does in diabetes, and therefore it may be entirely proscribed for a time with benefit.

The bowels should be kept open by those medicines calculated to act on the glands tributary to this outlet of morbid matter, while such applications should be made to the skin as are best adapted to increase the natural transpiration common to healthy action of the surface. For this purpose the warm whisky and alkaline bath should be prescribed at least once a day, and if the condition of the patient will admit of it, a cold sponge bath may be directed every morning, followed by friction with a crash towel to secure vigorous reaction. The daily free action of the bowels may be secured by taking one of the taraxacum and podophyllin pills every night, which will also have all the effect upon the liver that can generally be desired, and all that can be expected from any cholagogue known at present to the profession. The debility that may have been induced by this excessive action, so long continued, may be in part overcome by the use of mild tonics, exercise in the open air, and the use of as much nutriment of a healthy character as the circumstances of the patient will allow. A small amount of Scotch ale, taken two or three times a day, and at night a grain or two of valerianate of quinine, may be directed to secure a quiet state of the nervous system, so necessary to healthy and natural sleep in all such cases. But if comfortable sleep cannot otherwise be secured, a grain each of ipecacuanha and opium may be taken at bedtime every night, for a short time, until a regular habit can be established. But the most important measures are to abstain from the use of drinks, bathe the surface freely, and take abundant exercise in the open air.

The form of the disease I have been considering is intended to include an excessive secretion of urine, without any notable deviation from the normal composition of that fluid, except a

mere dilution by an excess of water. A similar abnormal state of that secretion is described in most modern works, which is characterized, in one case by a superabundance, and in another case by a deficiency, of a certain proximate principle of one of the solid substances of this fluid. But it must be confessed that so little is known of the nature of these two modifications, except simply that, in one case, there is an excess of urea, giving to the secretion a greater specific gravity, and in the other a deficiency of the same substance, and that each form is connected with certain general symptoms, that very little of a practical character can be said on the subject. In fact, the relation that most of the urinary disorders bear to the blood and the general system requires a more careful investigation before the practice recommended for their cure can be said to be scientific. The chemistry of the various deranged urinary secretions may be fully understood; but the condition of the general system, and especially the intimate character of the blood from which the secretion is taken, and its relation to that particular abnormal secretion, have not been investigated with that minuteness that is necessary to suggest the remedies for its correction, and I therefore will pursue the subject no farther.

DIABETES—DIABETES MELLITUS, OR HONEY DIABETES

The occurrence of diabetes, compared with most other disorders may be considered rare. The essential character of the affection consists in the formation of sugar in the urinary secretion. An excess in the renal secretion is not, at the present time, considered a necessary attendant upon diabetes, though the disease rarely exists without being associated with an unnatural amount of urine. Dr. Tweedie, in defining this disease, says, that “a *discharge* of saccharine urine, with great tendency to emaciation and suppressed transpiration, is probably less open to dispute than any other.”

Few diseases make their approach more insidiously, and with less manifestations of abnormal action, than diabetes. In fact, it often progresses almost to a hopeless statu

the true character of the malady is suspected. It is, perhaps, fortunate that excessive urinary evacuation is an early attendant upon the affection, or it might generally progress beyond the reach of medicine before its character would be known. This, upon inquiry, will be found among the earliest manifestations of the disease. The epigenetic change of certain substances of the system in the formation of sugar will not long exist without manifest disturbance in other leading functions, and hence the general debility and nervous irritation that are usually manifest quite early in its progress. But the only particular symptom, which would be likely to direct the inquirer's attention to the renal function as the seat of these disturbances, is this copious urinary secretion, and it is clear, therefore, that if it should fail to attract attention the case might progress far toward a fatal result. It thus becomes an important guide in correctly apprehending the disease.

It will first be observed by unusually frequent calls to evacuate the bladder, often disturbing the rest of the patient a number of times during the night. The secretion itself, upon examination, will be found of a pale color, and sensibly deficient in the natural urinous odor. From the beginning of the difficulty there will be a morbid and inordinate demand for food, mostly disproportioned to the ability to digest, and hence a common complaint is imperfect digestion. Excessive thirst naturally accompanies this morbid appetite, and is well calculated to lead the patient into the error that the extraordinary urinary secretion is the necessary consequence of the copious draughts taken into the stomach, while, in fact, the demand for both food and drink is caused by the morbid condition of the system. It is not uncommon to find that this state of things has existed for some time previous to the calling of a physician, the patient supposing the explanation referred to to be sufficient to account for the whole case, and it is not until a sensible decline and a general failure of strength have occurred that any other suspicion is entertained. The skin, meantime, is dry and harsh, in some cases presenting a rough and scaly aspect. Slight exposure is liable to produce a

chilly sensation, which is often followed by a moderate febrile reaction, but with no tendency to perspiration either from the use of diaphoretics or exercise. From the exceeding thirst and inordinate urinary evacuation, it cannot be doubted that absorption is active in full proportion to the deficiency of the surface-transpiration. This correspondence is still more apparent in the progress of treatment, for as the functions of the skin are restored so is the urinary evacuation diminished.

As already stated the functions of digestion are generally disturbed. A morbid demand for food, with less than the usual ability to digest it, are among the early symptoms of diabetes. The tongue is either clammy or high colored, the tip and sides being generally red, and the redness sometimes extends over the surface, with a dry and dark colored center; the gums are inflamed, and often present a scorbutic appearance, frequently bleeding upon being touched; the throat usually has a similar red or inflamed appearance; the breath generally partakes of the mawkish, sweetish smell of the urine, which is compared to the smell of hay; and the bowels are constipated, accompanied by uneasiness and often colic pains. The thirst is sometimes uncontrollable, patients often drinking almost incredible quantities, stated by some writers as high as forty or fifty pints in the twenty-four hours. The color of the evacuations from the bowels generally indicates a deficient biliary secretion, though the other symptoms attendant on such cases do not show any special derangement in the functions of the liver. The pulse is usually somewhat excited, but mainly feeble, though in some instances it is quite full and hard. Among the symptoms most likely to attract the attention of the patient is a peculiar pain in the head, not constant, but recurring in spasmodic and shooting paroxysms, frequently accompanied by giddiness. The condition of the blood varies in different stages. In the early stage it sometimes presents the cupped and buffy appearance common to irritation, while the serum presents a more milky or whey-like appearance than natural. At a later stage, more or less sugar is found mixed with the other elements of the blood, while the inflammatory appearances, manifest in

blood, and presenting more numerous and larger vessels, and enlargement of the uriniferous tubuli. The renal arteries and veins are also found at times enlarged. In general, no other morbid appearance is found in the kidneys; but in some cases there is an extensive deposition of grayish-yellow, granular matter, invading their cortical and even also their tubular structure. In one instance, an extensive deposition of hydatids has been observed. When an attempt has been made to investigate the state of the kidneys by injecting them, it has been merely remarked that the injection flows well, and that the injected vessels are numerous and large. The ureter is sometimes enlarged, generally also the bladder, and occasionally even the urethra; but not unfrequently there is no alteration in any of these organs from the healthy state. On the whole it may be considered, that so far as anatomical information has yet been obtained, the urinary organs present, for the most part, no further change than what appears to indicate an increased demand merely upon their function. It is perhaps worthy of being added, that in a case which proved fatal in the first year through incidental peritonitis, the writer could find no unnatural appearance whatever in the urinary organs, except some increase of vascularity and of blood in the kidneys. In a few instances the kidneys, instead of being enlarged, are found contracted. Tubercles in the lungs are not uncommon; they are found softened, and even extensive cavities have been observed. The mesenteric glands have at times been seen considerably enlarged, but this is far from an invariable appearance. The stomach is often quite healthy, sometimes red, or its inner membrane also rough and thickened, as is often seen in old dyspeptic cases; and, not unfrequently, it is much enlarged. The liver, spleen, and pancreas are usually healthy. The intestines do not present any unusual appearance in the generality of cases.

“It is plain therefore, that *pathological anatomy* throws no positive light on the nature of this strange disease. Nevertheless it enables the pathologist to advance some steps in his inquiries.

of C. Bernard, of Paris, who has pointed out a glucogenetic and olefant function of this organ. The blood generally contains a small quantity of glucose or grape-sugar, a substance less sweet and soluble than the cane-sugar,—also less crystallizable and more easily formed from amylaceous substances. Its chemical formula is $12\text{ C. }14\text{ H. }14\text{ O.}$ Glucose is developed in the chyle and the blood, in consequence of the transformation of amylaceous substances in the alimentary canal, (forming this peculiar sugar which is taken up by the lacteals and veins,) and in consequence of the transforming influence of the liver upon the portal blood. That the liver thus develops glucose in the blood, is proved by the fact shown by M. Bernard, that glucose, or a substance nearly identical with it, is found as a regular constituent in the blood of the hepatic veins, no matter what may have been the diet of the animal. Being in the hepatic veins, it is necessarily found in the onward progress of the same blood in the ascending *vena cava*, in the right side of the heart, and in the pulmonary artery. It is a remarkable fact that the formation of this species of sugar does not require amylaceous food, and that an animal, fed for some time on animal food alone, yields sugar from the blood of the hepatic vein, when none has been introduced into the liver by the portal vein. This clearly establishes the saccharifying power of the liver which is exerted upon the blood. In the liver itself, consequently, sugar is always present, even in the embryo. In the liver of the human adult, sugar has been detected in such quantity that the whole liver was estimated to contain three quarters of an ounce.

“In diabetes mellitus or mellituria, the quantity of sugar formed by the liver is vastly increased, and is discharged in great quantities by the kidneys. This would indicate that mellituria was really a disease of the liver, an excess of its glucogenetic function. (In the liver of a diabetic subject, Bernard found as much as 833 grains of sugar.) It is probable, therefore, that the treatment of mellituria, by agents which make an impression on the liver, will be found the most successful.

“This saccharific function of the liver appears to be controlled by the pneumogastric nerve and the medulla oblongata. The irritation of the medulla oblongata at the origin of the pneumogastric nerve, by puncture or by a galvanic shock, will cause such an increase of the saccharific function, that liver-sugar will be found in all the fluids of the body, (except the saliva), and will be discharged by the urine, thus producing a temporary mellituria, which continues for four days or longer in the dog, and for two days in the rabbit.

“This glucogenetic function of the liver shows the antagonism of its functions to those of the lungs. Glucose, like other compounds of the saccharine class, yields but little heat in its combustion, and the change of the elements of the blood into such a substance must have a tendency to lower the temperature. Hence the animals that have been made diabetic by irritation of the medulla oblongata, have their temperature lowered, several degrees, although their respiration is hurried, and an increased quantity of carbonic acid gas is thrown off. Their blood is also darker than usual. The liver, therefore, is the exact antagonist of the lungs, as it is engaged in producing an element which the lungs are engaged in destroying; and while the lungs elevate, the liver lowers the bodily temperature. The peculiar sugar produced by the liver is very readily destroyed by the pulmonary action. This is shown by the statements of Magendie and Bernard that it requires nearly five times as much of the liver-sugar to produce a given saccharine condition of the urine, as it does of the true glucose, and two hundred and forty times as much of liver-sugar as of cane-sugar, which shows that liver-sugar is more rapidly decomposed by the lungs, than any other saccharine substance.

“Whether sugar is produced in the tissues generally, as well as in the liver, is not certainly known. Lactic acid, a substance very similar in composition to sugar, is known to be abundantly produced in the muscular tissues, and recently Scherer professes to have discovered a saccharine substance in the juice of the flesh, which he calls inosite, the formula of which is $12\text{ C. } 16\text{ H. } 16\text{ O.}$

“The liver is believed to be a fat-making as well as a sugar-making organ. The hepatic vein, according to Bernard, contains more fat than the portal. In herbivorous animals it is supposed that the liver is concerned in a fatty transformation of amylaceous and saccharine substances. Such substances do assist in fattening animals, and it is supposed that the liver actually transforms them into fat. It may be, however, that they become substitutes for the regular formation of liver-sugar, and thus enable the liver to form fatty matter from the protein substances of the blood, which is its more common action. The sugar-making and fat-making functions appear to be distinct and opposite in character. The bodies of mel-lituric patients are deficient in fat—in their livers fat is deficient, and in the fatty livers of consumptives sugar is lacking. The sugar formation in the liver is more characteristic of carnivorous, and the fat of herbivorous, animals. The formation of fat from the albuminous elements of the blood is shown to be possible, by the fattening of animals, which is not proportioned to the quantity of fat in their food. It is also illustrated by the degeneration of the tissues of the body, which frequently occurs in life, as well as by the formation of adipocere from flesh when macerated.”

Thus it will be observed that no settled or uniform views are entertained in regard to the intimate nature of this affection, and though one or the other of the views here set forth may be correct, little of a practical character has yet been deduced.

Causes. A correct knowledge of the true pathology of diabetes would, no doubt, be a key to the cause of the difficulty, and at the same time would be the most important step toward its cure. But since the most important points connected with the disease are yet undetermined, and the opinions of the essential character of the affection are at best merely theoretical, we may as well confess our ignorance of the circumstances of its production, as to attempt an explanation that may hereafter be shown to be erroneous. Many circumstances have been observed bearing such a relation to diabetes as would seem to mark them as probably producing

it. But when it is known that the same influences have operated in thousands of instances, under circumstances equally favorable to the production of the affection without causing it, we should at least hesitate in our conclusions, and search farther for its cause.

Prognosis. The insidious approach of the disease generally allows it to progress so far before medical aid is called, as to render the termination of most cases unfavorable. But when the disease can be met before it has made too great progress, most cases should get well.

Treatment. Whatever may be the pathological relations of the system to the formation of diabetic urine, the second, if not the first indication would naturally be to withhold from the system those substances that can be converted into sugar, or that contain saccharine matter ready formed, and then to restore tone to the system, upon the want of which the difficulty may in a measure be depending. That this course, together with the administration of appropriate remedies to excite a healthy hepatic secretion, and relieve the irritation usually found in the roots of the spinal nerves, will most effectually fulfill the main indications of the case, I am led to conclude from the most reasonable views of the phenomena presented by the disease, and from our knowledge of the functions of digestion, and the important part which the liver performs in the perfection of that process, as well as from the suggestions of experience. This course is nearly equally applicable, whether the primary difficulty be looked for in the stomach, in which a species of ferment is produced favorable to the formation of sugar; or whether the main difficulty is found in the liver, by which organ saccharine matter is directly generated, as has been supposed by some; or whether, from the want of a healthy secretion of bile, the second, and probably most important, part of digestion is checked, thus allowing a fermentation in the duodenum and small intestines of vegetable substances, which furnish the elements of sugar in great abundance, and, in the absence of the neutralizing influence of bile to perfect the process of digestion and prepare the aliment for absorption, favor the saccharine fer-

mentation and furnish the blood with sugar, which is eliminated by the kidneys.

To fulfil the most important indication, patients should be put almost exclusively on a moderate fresh animal diet, specially avoiding those vegetable substances that contain starch, as this substance is readily converted into sugar, and more particularly avoiding those vegetables which contain sugar ready formed, such as beets, parsnips, etc. As bread, rice and potatoes are largely made up of starch, these articles should be proscribed. Experience fully sustains what theory in this instance suggests. In almost every case where experiments have been made, diabetic patients have grown worse, and the saccharine matter has decidedly increased, after the use of bread and potatoes. Although water does not add to the saccharine quality of the urine, yet, from its direct influence in diluting the blood, in increasing the action of the kidneys, and thereby perpetuating the irritation existing in those glands, the necessity for preventing its use in any considerable quantity becomes apparent. Patients, therefore, should be allowed but a very small amount of fluids of any kind. A cold infusion of common tea will be found the most harmless, and at the same time quite as efficient in allaying thirst as any drink that can be taken. Patients may be allowed to take a swallow of this every hour or two. While it allays thirst, it possesses a moderate astringency, and will be found to increase the urinary secretion as little as any other drink.

While this course of dieting is being vigorously pursued, proper attention to the skin is a matter of not much less importance. The necessity of a healthy condition of this great emunctory, in most diseases, has been too much overlooked, and, though its disorder cannot be regarded as the prime cause of diabetes, yet universal observation proves that it does not perform its natural part in this disease, in eliminating from the blood the usual amount of fluid, and thus leaves the kidneys to perform a portion of its work, thereby increasing their already excessive action. Frequent bathing is, therefore, desirable in this disease. The warm alkaline and whisky b

may be used before going to bed, and the cold sponge bath in the morning before dressing ; in both instances following with brisk friction, especially over the spine, to secure a free capillary circulation. Simultaneously with these measures, it is all important that the condition of the stomach and liver should be particularly looked to. To promote the most immediate and healthy action of the liver, and thereby produce a corresponding condition of the other organs concerned in digestion, the compound taraxacum and podophyllin pill should be given every night and morning, or in such quantities as will secure at least one evacuation from the bowels every day. But when the stomach is found loaded with vitiated secretions, it will be well to premise with a mild emetic, and this indeed may be repeated in a few days, if the effect of the first appears beneficial.

As a tonic, in these cases, a decoction of staphylea and wild cherry may be given in wineglassful doses three times a day. Few medicines have a more marked influence in diminishing the excessive urinary secretion than opium. But its influence upon the other glandular secretions, especially that of the kidneys, renders its administration generally objectionable when we can get along without it. Yet in cases of great nervous irritability its use may become indispensably necessary. It may be given, however, so as to subserve a valuable purpose, in addition to its quieting effect upon the nervous system. In combination with ipecacuanha in equal parts, given in three grain doses of the compound, and repeated as often as may be necessary as a sedative, it will rarely fail to produce a moderate relaxation of the skin, followed by a more soft and often moist state. Moderate exercise in the open air is generally beneficial in most chronic diseases, and when the strength is not too much exhausted to admit of daily exercise, it should not be neglected.

Various other remedies have been tried, and some appear to be so well sanctioned by experience as to entitle them to the benefit of a trial, when those remedies which our own experience more particularly recommends fail to answer our expectation in relieving the disease. Among these, creosote

is said to have been successful in curing an unpromising case. This case is copied from the London Lancet by the Boston M. and S. Journal, for September, 1834, as follows: "The following is a short account from *Hufeland's Journal*, for February last, of an eighth case of the above disease, treated by Professor Berndt, of Driefswaldt, after having treated the preceding seven with opium, emetic, arsenic, bleeding, etc., all unsuccessfully. The seven all died. The eighth patient was a man fifty years of age, who daily passed seven and a half pints of urine, which, when analyzed, was found to contain a good deal of sugar. There were considerable thirst and appetite, and little sleep, but no hectic fever had appeared. An emetic was at first administered, and the patient then put on Rollo's diet, but without benefit. Finally, he was directed to take daily eight drops of creosote in sixteen pills of gum arabic. The thirst and appetite were soon reduced, the excretion of urine was brought down to three pints and then to two. The dose of the remedy was now increased, and the animal diet suspended after three weeks' employment. The urine now contained much less sugar, and began to offer some traces of urea. From this period the quantity of urine rapidly diminished, the sugar gradually disappeared, and the excretion finally assumed its natural qualities, and was discharged in regular quantity; the patient, in a word, was perfectly cured."

The treatment of another case is given in the Boston M. and S. Journal, in which the tincture of cantharides, together with an exclusive animal diet, proved successful, after the trial of various other measures without any apparent benefit. The case is thus reported by Dr. Hall, Professor of Obstetrics in the University of Maryland: "On the 22d of April, 1831, I was requested by Dr. E. Perkins, of this city, to visit with him Robert Kinnier, a lad about seventeen years of age, laboring under diabetes. On reference to my notes, I find the details of the same as here given. Our patient seemed to be somewhat emaciated; had a sallow complexion, with those appearances of general disorder which often follow our autumnal remittent fevers. On inquiry I learned that he had

suffered by an attack of this disease during the preceding autumn, while engaged with his father on the line of the Baltimore and Ohio railroad; and after the more severe symptoms of the attack had passed away, a remittent fever with irregular paroxysms had continued to manifest itself occasionally. At the time we saw him, these paroxysms were interrupted; but he still remained languid, incapable of active exercise, and much depressed in mind. He sometimes walked slowly in the open air, from which he experienced fatigue. His liver seemed to perform its functions slowly, but there was no tenderness or enlargement from which might be inferred a serious disturbance of this organ. He had occasionally a very slight cough. The tongue was whitish, and his skin cool. The perspiration did not appear to be materially changed from the standard of health. We requested that the urine should be retained for our examination, and the quantity discharged between the hours of nine o'clock in the evening and six of the following morning, (nine hours,) was found by measurement to be more than one gallon, of a pale straw color, and sweet to the taste; pulse 84; appetite irregular, digestion also imperfect. He labored under no important pulmonary disturbance, and the alvine dejections evinced the presence of biliary matter.

“Tonics were first directed. *S. quinine*, *phosphas. ferri*, etc., were freely used without apparent benefit for some time. No vegetable preparation, except bread, was allowed to be taken. His diet was directed to be purely *animal*, with the foregoing exception. Still, finding that his diabetic symptoms were not materially altered, we prescribed the *tinc. meloc. vesicat. m. xx. ter. die.*, directing an increase of five to ten drops each dose, unless strangury should be perceived.

“On the 19th of May, we found his pulse 84—one pint of urine discharged during the night—bread omitted and diet altogether animal. It may be remarked that he relinquished the use of bread with great reluctance, occasionally obtained it by stealth, but acknowledged that it always increased the flow of urine. He then concurred in the propriety of the prohibition, and abstained from its use. On this day he was

taking 270 drops of the tincture thrice a day—tongue more natural—urine less—bowels more regular—directed to increase the tincture. He sleeps more comfortably during the night.

“On the 9th of June, dose of tincture four hundred drops, which produced a slight strangury—bowels regular, and feces natural in appearance—urine last night 3iv.—diminished the quantity of the tincture—pulse 84.

“June 12th:—Takes 350 drops—tongue more natural—pulse 90 and soft—appetite and digestion improved—so also his general appearance. After this period he gradually increased the amount of the tincture to four hundred drops each dose, without strangury and with manifest advantage. He now was enabled to take exercise in the open air, and his strength was increasing daily.

“On the 19th June, he applied to the apothecary for a fresh supply of the tincture. A small quantity remained in the bottle from which he had previously been supplied, and in taking it down from the position which it occupied, the fluid was agitated, and thus suspended much of the fine particles of the cantharides. Of this turbid fluid he took in the morning 425 drops, estimated to be double the strength of the pure tincture. Pain of the kidneys, distressing strangury, and urine slightly tinged with blood, followed. When called to visit him, I found his pulse 90 per minute, voluminous and active. The warm bath was forthwith directed,—m. 60 Tr. opii. with 3i. ol. ricini were given with mucilaginous drinks. He was soon relieved and readily evacuated the bladder. The quantity of fluid was small. 20th June, pulse 90—quite composed—free from pain and strangury; urine natural, and moderate in quantity. Directed the tincture to be omitted. No morbid change, or increase in the quantity of urine was perceived after this. On the 23d of June, he had a slight paroxysm of remittent, which was speedily interrupted by the use of S. quinine. Pulse 80 on the 26th, and no evidence of diabetes remaining. He soon regained his strength, and entered on an active course of duty, as a grocer, in Baltimore.”

The same journal contains the recommendation of a decoction of sweet apple tree bark in wineglassful doses three times a day.

The following case, recited in the same journal for March, 1854, was that of a boy six years and eight months old. The writer says he "analyzed a specimen of the urine, with the following results:—The urine pale straw color. Specific gravity 1.040. No acid reaction. No appearance of albumen. Most decisive evidence of grape sugar. The treatment advised was a cathartic of castor oil—to be followed by a drachm of cod-liver oil, three grains of phosphate of iron, and six drops of liquor potassæ, each three times per diem at intervals of one hour. The patient was to be confined to a strictly animal diet. On the 17th [after four days] I again examined the urine, and found it improved in color, specific gravity 1.030, a slightly acid reaction, abundant evidence of grape sugar.

"The treatment was continued, but the patient having vomited the cod-liver oil a cathartic of calomel was given, followed by castor oil. The same treatment was then continued as before, except that the dose of liquor potassæ was diminished from six drops to three. From this time the quantity of urine diminished daily. Diaphoresis was easily instituted, and all the symptoms were much improved.

"Jan. 10th. Another specimen of urine was examined, which resulted as follow:—Color of the urine normal. Specific gravity 1.016. Acid reaction. Slight evidence of sugar. For the two weeks previous to this date, the diet of the patient consisted of cheese and eggs. The quantity of urine was normal."

"Feb. 12th. I again examined the urine, and found it as follows:—Color normal. Specific gravity 1.020. Acid reaction. No trace of sugar. The patient to all appearance is well. His weight has increased, since Dec. 12th, seven and a half pounds. He was vaccinated for kine pox the last week in January with success. Occasionally he "helped himself" to other kinds of food, but in the main he was con-

finer to animal diet. The boy is at present ruddy and active, with no evidence of disease about him."

There is, probably, no disease the treatment of which is more justly chargeable with empiricism than diabetes, and this must continue to be the case so long as the cause of the difficulty is involved in obscurity. I have given you the main points to be observed in the treatment, as well as some of the prominent modes of treatment, which have been found least injurious and probably most beneficial.

LECTURE LXIV.

SUPPRESSION OF URINE—ISCHURIA RENALIS.

Difference between suppression and retention — Suppression described — Effects on the constitution — Cause of these effects — Causes of suppression — Treatment.

RETENTION OF URINE.

Description — Different forms from different causes — Treatment.

INCONTINENCE OF URINE—ENURESIS.

Description — Treatment.

The terms suppression and retention of urine are sometimes used in common parlance as synonymous. But the meaning of the two terms is entirely different, and is so taken by all respectably educated physicians. By suppression of urine is understood a greatly diminished or complete arrest of the secretory action of the kidneys. It cannot strictly be considered as a primary disease, for whether it be dependent upon want of action in the function of the kidneys, or upon a diminished amount of the elements of the urinary secretion in the blood, it would still be symptomatic of some prior existing disorder.

Suppression of urine is a common attendant upon low grades of fever, and the increase of the urinary secretion often becomes the main indication to be fulfilled in the treatment of dropsical affections. But the symptoms so often present themselves unconnected with other more apparent disorders, as to fully justify a brief consideration of the subject as an independent disease.

To constitute this difficulty does not require an entire interruption in the secretion, but an unnatural departure from the ordinary amount discharged. It will, therefore, be perceived that each case must be compared with itself, in determining whether it should be considered one of disease. For while the amount discharged by some individuals as compared with others would be considered a sufficient departure from the ordinary amount to constitute diseased action, yet when compared with the usual quantity evacuated by the individuals affected, it might be found only a slight deviation from the general habit. Thus, while some individuals in health urinate half a dozen or more times in twenty-four hours, and pass at each evacuation a pint of healthy urine, another person, in the enjoyment of equally good health, will not be called upon more than twice in the same time, and his several discharges will be less in quantity than those of the former. But if the discharges of the former should be reduced to the quantity that constituted the standard of health in the latter, we should be fully justified in considering it a sufficient departure from the healthy and necessary amount to constitute a case of disease. And when the case presents nearly or quite an entire arrest of the secretion, we should have no hesitation in considering it one of disease, and treat it accordingly.

It will not answer, however, to consider every case a suppression of urine, in which that fluid is not discharged; for by so doing we would be liable to increase the difficulty which we are called to relieve. The urine may be freely secreted, but owing to some obstruction in the urinary conduits, either in its passage to the bladder, or in the neck of the bladder, or urethra, when thus far on its way, or for want of tone in the muscular coat of the bladder, be retained, while the ordinary amount is secreted by the kidneys, and any medicine calculated to increase the secretion, until the obstruction is removed, would only add to the difficulty of the case. It becomes a matter of some importance, then, to ascertain the facts in the case before we proceed to treat it. If the urine is retained in the bladder, it will generally be indicated by

and compounds that are no longer useful to the system, which, though they are generally found, in small quantities, in the circulation, are nevertheless mostly eliminated as fast as they are formed; and, though they all tend to embarrass the organic laws, and produce disease, when in excess, yet none are so serious, and often fatal, in their effects as urea.

Although the chemical character of the urine has been very carefully studied, and all its elements pretty fully described, it is nevertheless true that the pathology of most of the diseases incident to derangement of the renal functions is less perfectly understood than that of most other affections, and we are therefore under the necessity of prescribing more from theory, in the treatment of these disorders, than in most others, or than is agreeable to a practical mind. Few of the causes of these affections, especially of suppression, are so apparent as to be distinctly recognized, and allow the direct application of remedies for their removal, and this is an additional reason for the empirical character of the therapeutics of the disease.

Causes. As just intimated, the causes of the disease cannot in many cases be very intelligibly defined. In most cases it is an attendant upon other diseases, and in that relation has to be treated merely as a symptom. In typhoid, and many other low and exhausted conditions of the system, suppression of urine is very common,—partly referable to the general exhaustion, and partly, no doubt, to the condition of the blood. In these cases, it is not uncommon for patients to pass but a small quantity once in twenty-four or forty-eight hours. In Bright's disease, and especially in the latter stage of the disorder, a partial and sometimes an entire suppression is very common. In most dropsical affections it is among the most prominent symptoms, and the most important indication for their cure is to restore the urinary secretion. It is among the earliest manifestations in affections of the brain following cholera infantum. In epidemic cholera, the entire arrest of the urinary secretion is very common, the bladder being found empty and contracted.

Partial suppression of urine may exist for a long time with-

out producing any serious inconvenience or disease, the elimination of the poisonous urea taking place, perhaps, through the vicarious action of some other organ, or possibly being less perfectly supplied than usual. In some cases the perspiration has a decidedly urinous smell, and no doubt the other emunctories may for the time being supply, in a limited way, the deficient action of the kidneys. But when the suppression becomes complete, and comatose symptoms supervene, little doubt can be entertained that the nervous system is sinking under the poisonous influence of the urea, and will generally prove fatal. Where no urgent symptoms follow the arrest of the secretion, we may reasonably infer that the urea is not formed in its usual quantities, or that the substituting influence of other eliminating functions is removing it from the circulation. Many cases are recorded in which the urinous smell was perceived in various secretions from other parts, such as the saliva, the perspirable matter from the umbilicus, axilla, etc.

Treatment. If it is possible to ascertain the cause of the difficulty, this should be our first and main object. If inflammation of the kidneys should be found to be the producing influence, the case should be treated as for that disease. Cups should be freely applied to the region of the kidneys followed by hot fomentations, and a brisk and active cathartic should be given. For this purpose the antibilious physic and cream of tartar is perhaps the most efficient and reliable. The patient should also be directed to drink freely of the marsh mallows, and may take from six to ten grains of the acetate of potash every two hours.

But if the case is dependent upon mere atony of the renal glands and diversion from the kidneys, by the serous accumulation in the cavities or other parts, the most active diuretics should be given. The cider and elder preparations, with cream of tartar and rock candy, and other hydragogue medicines, should be prescribed, as recommended for the different forms of dropsies. The action of the kidneys is sometimes more readily excited by gentle tonics and diuretics combined than by either alone. The common gin bitters I have fre-

quently found to have a beneficial effect in such cases, especially when given so as to act moderately on the bowels. In many cases, the apocynum, as recommended for dropsies, will succeed in promoting the urinary secretion, when other agents more decidedly diuretic, or that may be supposed to act more directly upon the kidneys, fail to answer the purpose. Squills, digitalis, spirits of nitre, and a decoction of spearmint, will all be found occasionally useful in certain forms of the disease; while a simple, but often effective remedy in exciting a more free urinary secretion, will be found in a decoction of mullein leaves, which may be taken freely. For children, I have as often derived advantage from watermelon seed tea, or from an infusion of parsley or pumpkin seeds, as from any simple remedy that I have ever used. The eupatorium purpureum and asclepias syriaca, both possess valuable diuretic properties, and may be used in almost any case where diuretics are indicated. An ounce to a quart of water of either of the articles will be the proper quantities for a decoction, and may be taken in wineglassful doses three or four times a day.

But the obscurity of the cause of the difficulty will often produce in the mind of the inexperienced practitioner a feeling of uncertainty as to the proper course to be pursued. In this case, as in many others, the judicious practitioner will be quite certain that his prescriptions shall do no injury, by administering simple and harmless remedies. In those cases clearly connected with other diseases, in which it is quite impossible to determine the relative importance of the secretion for the recovery of the patient, we should be very cautious how we administer active medicine of any description. We should rather wait until some plain indication presents itself before we proceed. In these cases the milder diuretics, such as the decoction of mullein leaves or watermelon seeds, should be preferred.

RETENTION OF URINE.

By this term is understood an obstruction in the evacuation of the urinary secretion, occurring either in the ureters

or bladder. The first is called *renal*, and the latter *vesical* retention. Retention of urine from obstruction in the passage from the kidneys to the bladder, is not a very common occurrence. It may arise from acute inflammation of the ureter, or chronic thickening of its coats, or from the passage of renal calculi. In either case it becomes a serious disease, and may very soon prove fatal. It may be distinguished from a suppression by far greater pain and suffering, and this confined mainly to the region of the ureters.

The retention is rarely complete, as it is very uncommon for both ureters to be obstructed at the same time, and in this case the partial retention, with the local symptoms, will be sufficient to determine the case. The obstruction, in all such cases, becomes a source of great suffering, and if not speedily relieved is liable to produce an effusion into the cavity of the abdomen. Or the accumulation may cause inflammation, which may result in abscess and disorganization, with rupture and discharge of pus into the cavity of the abdomen. The obstruction in these cases may be produced by a small coagulum filling up the ureters.

Vesical retention, or retention from obstruction at the neck of the bladder, or from paralysis of the muscular coat of the bladder, by which the individual is unable to discharge the urine after it is secreted, is a very common complaint. Inability to urinate is mostly accompanied by more or less pain, in some instances of the severest character, and is, therefore, not very liable to be overlooked or mistaken. The full and round tumor that can usually be felt, especially in spare persons, immediately above the pubis, with the absence of evacuation, even if there is no pain, will generally suffice to determine the true character of the difficulty. But in very fleshy persons, or in a tympanitic state of the bowels, the distended bladder will be less readily detected. Yet in this case, percussion will be found to yield very little sound, and it may thus be determined. It may, however, be rendered more difficult to determine when complicated with dropsy of the abdomen; but in this case, pressure on the bladder will be productive of pain and uneasiness that are not present in

ascites. If any doubt still exists, the introduction of the catheter will soon settle it. The accumulation becomes so great, in some cases, as to distend the bladder far up into the abdomen, producing serious inconvenience, and often great pain and suffering. In some cases it is said the distended bladder has been mistaken for ascites.

This, like the other form, may be produced by mechanical obstruction, but unlike the other is sometimes produced by spasm of the neck of the bladder, or by palsy of that organ. It is sometimes produced temporarily by a stone lodged in the neck of the bladder, but more frequently by stricture either at the neck of the bladder, or further up in the urethra. But, in some instances, it comes suddenly from cold or other exciting causes, producing irritation and spasm. This is usually attended with very severe pain and suffering, all referable to this region. It is also often caused by paralysis of the bladder, by which the contraction of the muscular coat is destroyed; and the bladder often becomes distended, without pain, to a very great degree. Retention of urine is frequently an attendant upon child birth, and is not only productive of severe suffering, but also greatly retards the labor, and may result in rupture of the bladder by the severe pressure upon it, if not relieved. In such cases, the only course is to evacuate the urine with the catheter. But a common female catheter will not answer the purpose, as the distended bladder is above the pubis, projecting forward so far as to render it impossible to introduce a common silver female instrument; and in such case a flexible gum catheter without the wire should be used. In a number of cases I have known the labor, which was greatly delayed, and accompanied by inefficient but distressing pains, to proceed with great ease and rapidity after thus evacuating the bladder.

Retention from paralysis of the bladder, when it is complete, is the result of a want of the contractile power of its muscular coat, but the loss of action does not extend to the fibro-muscular sphincter at the neck, as in that event the case would exhibit more of a mixture of incontinence and retention. In this case, where the paralysis involves the whole

muscular structures concerned in the retention and evacuation, the urine is liable to pass off upon any change of position, as often as it is secreted, and occasion great inconvenience and unpleasant consequences.

Treatment. Those rare instances of renal retention, dependent upon inflammation about the pelvis of the kidneys and ureters, must be treated similarly to an ordinary attack of inflammation, by cupping, fomentation, and hydragogue cathartics, with mild mucilaginous and cooling diuretics. The antibilious physic and cream of tartar, the marsh mallows and acetate of potash, and other similar measures will be appropriate in such cases. But when it is produced by renal calculi, by which one or both of the ureters are plugged up, hot fomentations and anodyne antispasmodics, with the alkaline bicarbonates, to disintegrate gradually the calculous accumulation lodged in the passage, are the most reliable measures at present known by the profession. They may be used simultaneously with abundant diluent diuretics, in order to render the urinary secretion less irritating than it is usually found to be in such cases.

But when the retention is in the bladder, the measures to be employed must depend entirely upon the cause of the difficulty. If it is produced by inflammation, the measures heretofore recommended for cystitis are to be applied, such as hot fomentations, cooling diuretics, and free hydragogue purgatives. The catheter, also, should be used to relieve the distended bladder, when necessary, which is rarely the case. When it is produced by sudden cold, resulting in spasm of the neck of the bladder, the warm hip bath, hot hop fomentations applied immediately over the pubis and frequently changed, a full dose of the sudorific tincture in warm spearmint tea, and an injection, if necessary, of assafoetida and laudanum, should all be resorted to in as short a time as the circumstances will allow. The philosophy of these various measures requires but little explanation, as it is mostly self-evident. The sudorific tincture determines to the surface, producing at the same time general relaxation, and relieving very promptly the severe sufferings of the patient by relaxing

the sphincter, which is generally followed by a discharge of urine. If this should not follow after the severity of the pain is mainly relieved, little difficulty will be experienced in introducing the catheter; while before such relief occurs the spasm at the neck of the bladder will be too unyielding to admit of the passage of the instrument. In less severe cases of this description, I have often obtained entire relief from the muriated tincture of iron given in five drop doses every hour, with hot fomentations applied to the lower part of the abdomen.

The cases of retention of urine, dependent upon paralysis of the bladder either partial or complete, will often require the most persevering efforts for a length of time before you may expect relief; and even then, when the disease is seated in the roots of the spinal nerves, as it is in many cases, and especially if the case be one of paraplegia, our best directed efforts may be useless. While, however, we may be under the necessity of relieving the patient by daily evacuating the water with the catheter, and while we may administer internally those medicines best calculated to excite action in the palsied organ particularly, our main curative measures will be found to consist in diverting the irritation from the roots of the spinal nerves, and exciting action in the reflected branches. For a short time during the first part of the treatment, cups and scarification may be applied to the lower part of the spine, over the seat of the origin of the nerves running to those parts, and repeated every day; while a current of electricity should be passed through the affected parts, applying one pole to the spine and the other to the perineum above the pubis, or it may be conducted directly to the bladder by introducing a bougie into the urethra: and strychnine may be given internally until its specific effects are realized. After it is thought best not to apply the cups any longer, a constant discharge should be kept up over the seat of the difficulty with the irritating plaster. For this purpose, a plaster eight or ten inches long and three wide should be as constantly worn on the lower part of the spine as the irritation it creates will admit. But where the difficulty is a mere temporary loss

ation to discharge is felt as often as a very small quantity accumulates, and it also results from sudden frights and extreme mental emotions. These cases properly belong to other subjects, and are not intended to be included in the consideration of incontinence of urine as here understood.

By this term is more particularly understood that form of inability to retain the urine which is most common to children. It is sometimes, also, found in adults, but is generally observed to have followed them from childhood. In these cases the sphincter of the bladder retains its contractile capacity in a moderate degree, though not to the extent necessary to retain the secretion when it accumulates beyond a certain amount. So that, whether the individual is awake or asleep, it must be evacuated. During the waking hours, of course, it will be voluntarily discharged, but during sleep it passes away unconsciously, and the individual is subject to the inconvenience and mortification often attendant upon it. The development of puberty fortunately so modifies the susceptibilities of the system as to relieve the weakness of the neck of the bladder. But this is not always the case. This mainly grows out of want of attention and proper care at an early period, by which the habit may be weakened, and the change referred to finally eradicates the difficulty. But from the inconveniences connected with it, as well as from the influence it may have on the future prospects of the child, it specially behooves every parent, having children who are afflicted with this weakness, to make use of every available means for its relief. The discharge sometimes comes on shortly after the child is put to bed, no doubt in this case brought on by dreaming; but most commonly it occurs later at night, after the secretion has accumulated to a considerable amount, and the other sensibilities of the system not being equal to those of the neck of the bladder, the secretion is discharged while the patient is wholly unconscious of its occurrence. From my observations on the subject, I have been led to think there is some truth in the tradition that it more frequently occurs while the child is lying on the back than when in any other position. I have known children who would regularly have

the discharge when lying on the back, while if care was taken to secure another position it was avoided. The secretion in most of these cases is more copious than is common to other children, and generally presents a more pale or light color,—though it is said to be more scanty than usual in some cases,—exhibits a far higher color, and is found to have a sediment upon cooling. These cases I should be inclined to refer to another cause, and not to consider as a mere weakness, but rather an irritation.

Treatment. Very little can be expected from medicine while the child is allowed to indulge in the use of drinks to the extent usually desired in such cases. It should, therefore, be made a point to restrain the demand to a very small amount. It is also important to be careful not only to require the urine to be voided before going to bed, but also to rouse the child at the latest hour practicable, before the accumulation has taken place beyond the extent of toleration. At the same time for the purpose of reducing the excess of fluids in the blood as much as possible, the surface should be freely bathed, before going to bed, and followed by friction, to secure a free perspiration. If these measures are strictly attended to and persevered in, they will frequently succeed without the use of any other means. But if other remedies should be found necessary, or if it is not thought best to make use of the course suggested before resorting to internal medication, the most reliable are those that give tone to the general system, and arouse the action of the sphincter muscle at the neck of the bladder. *Tincture of cantharides* and *spirits of turpentine* are about the only medicines known at present that can be said to have any specific tendency to stimulate the neck of the bladder. The *tincture* should be commenced in small doses, and gradually increased until slight difficulty is felt in voiding the urine, when it should be suspended, and small quantities of mucilage of marsh mallows should be taken until it subsides. If it is commenced in full doses at first, you are liable to create an inflammation at that point that may not readily be controlled. It may be given to children in doses varying from ten to forty drops,

and increased to a hundred, or until its specific effects are realized. The *turpentine* is given with similar expectations; it is not, however, quite so reliable and certain, though in some cases it affords relief without producing so much local irritation, probably by increasing the stimulating qualities of the secretion sufficiently to act upon the bladder. This medicine should also be commenced in moderate doses, and gradually increased until its effects upon the disease, or its local action, can be observed. The general health should at the same time be particularly attended to, and such tonics and restoratives prescribed as may best subserve the indications presented in the case.

Where spinal irritation is found to have any influence in perpetuating the disease, the local measures recommended for other forms of spinal irritation should be used. Cupping, if necessary, counter-irritation with the irritating plaster, or the shower bath with friction, together with the internal use of strychnine, and galvanism, may all be appropriate in different cases of the kind.

a cold and clammy perspiration. These symptoms may occur without the supervention of complete unconsciousness, and may be mostly dispelled by mere change of position. In some instances the system thus recovers, then sinks away again, and finally rallies without an entire syncope. It often, however, goes on increasing until the respiration is suspended, the action of the heart so far weakened—if not suspended for a time—as not to be felt at the wrist, and consciousness becomes entirely extinct. If, however, the action of the heart is suspended, it can be so only for a few beats, as it can usually be heard upon careful examination.

In some instances syncope comes on suddenly, with scarcely any premonition, though generally individuals will afterward recollect a cloudy vision, and a weak and faint sensation before total unconsciousness came on. It rarely continues long, though in some cases there are several successive fits of swooning. But cases are recorded in which patients have continued in this condition for hours and sometimes for days, if indeed those cases of trance or suspended animation so closely simulating death are rightfully placed in this connection. As the system begins to recover its action, respiration gradually returns, often beginning with sighs, the action of the heart becomes more apparent, the pulse can be felt at the wrist, the skin becomes warm, the capillary circulation restored, and muscular motion is again resumed.

The *causes* of syncope are various, though the immediate influence that develops it is a want of the stimulating or vivifying effects of a sufficient amount of blood upon the brain. This condition, however, is itself produced by a great variety of causes, so diverse in fact as to present in some cases an apparent contradiction of the proposition. Thus, peculiar odors are said to produce syncope in some sensitive systems; it has been known to follow offensive and painful sights; and the appearance of blood, or even the apprehension of a painful operation has brought it on in some cases. Severe injuries, such as blows, falls, and severe concussions, may produce it. The loss of blood from spontaneous hemorrhage or venesection, differing however according to the toleration

of different systems, is one of the most common causes of syncope. Flooding after delivery is a very frequent cause of fainting, aided no doubt by the shock experienced from the collapse necessarily attendant upon parturition. This view is clearly supported by the sequence of the same effects upon the removal and evacuation of dropsical accumulations without the loss of blood. It is also frequently produced by the erect position in cases of severe illness, and when it occurs after protracted fevers, while the vital forces are greatly exhausted, it occasionally proves fatal.

But syncope may occur in an opposite condition of the system, when the action of the heart is weakened by temporary oppression from undue excitement of the nervous system. In this way no doubt it is occasionally produced by the direct influence on the nervous system of certain medicinal agents, such as prussic acid, tobacco, and others. The relaxing influence of the hot bath, or exposure to intense heat, sometimes induces fainting. Authors mention as one of the most rapid and fatal instances of syncope, that which is produced by the sudden injection of air into the veins—a result very liable to occur in cases of transfusion, which is an operation having very little if any claim to favorable consideration. It is said also that syncope is produced by copious draughts of cold water when the system is relaxed from excitement or great heat. A heavy shock of electricity is enumerated as one of its causes, but I think it may be questioned whether this is not owing to the immediate paralysis of the great nervous centers, and the consequent direct destruction of life, rather than to the indirect influence of ordinary causes.

Diagnosis. In most cases it will not be very difficult to distinguish the existence of syncope from other analogous conditions of the system. But a state of asphyxia or of sudden death may be mistaken for fainting, without a just discrimination of the characteristics of each. In apnœa, the purple or blue appearance of the subject will sufficiently distinguish the case; as in syncope the countenance is pale or blanched, with none of that venous congestion which always exists in asphyxia, from whatever produced. But the history of the

case will usually furnish satisfactory distinctions, without any other aid.

It is, frequently, no easy matter to distinguish cases of prolonged or persistent syncope, in which the general manifestations of life are wanting, from those cases of sudden death where the warmth of the body has not entirely disappeared.

But the most difficult and perplexing cases to determine, are those occasionally to be met with in which animation is apparently suspended, but some warmth still remains after a sufficient lapse of time to ordinarily mark the case as unmistakably fatal. I have met with a number in which the warmth continued far beyond the ordinary period, suggesting the suspicion that life was still latent and might return; yet no such results were observed, though in such cases I have uniformly advised delay in the interment. Cases do, without doubt, occur of reanimation after this apparent state of death has continued for a number of days. Whether a careful exploration would not detect a slight though weak action of the heart, is a question not perhaps fully determined. I think there can be no doubt that such cases would present appearances—perhaps not easily described—yet clearly indicative of the existence of some vitality, though quite latent or nearly extinct. In these cases moreover there is invariably an absence of that cadaveric stiffness and rigidity universally peculiar to cases in which life is totally extinct. But always while the least doubt remains, no person of correct feelings would hesitate a moment in solving that doubt by retaining the body until unmistakable evidences of decomposition showed themselves.

You will occasionally meet with cases of a nervous or hysterical character, in which, either from a feigned or real state of the system, an apparent unconsciousness exists, with a very gentle and almost imperceptible respiration and a pale appearance of the face. But by careful observation you will be able not only to detect respiration but also to readily feel the pulse at the wrist, and by examination of the eyes the pupil will be found entirely sensible to the light.

Treatment. The main indications in the management of

vent the use of internal remedies, a small dose of the tincture of camphor, or, if convenient, a drachm of the sudorific tincture may be given ; and in cases attendant upon the exhaustion of the system, the excitement may be kept up by a solution of ammonia or diluted spirits. At the same time volatile and stimulating substances, such as camphor, musk, ether, etc., may be applied to the nose, thereby directly exciting more active respiration and thus giving an impetus to the circulation, while the face and chest may be freely bathed with the same. The body should be kept warm with appropriate clothing, and hot bricks and the like applied to the extremities.

If, however, it is a case of complete syncope, internal remedies cannot be administered, and you will therefore have to rely upon the position and all the other external appliances appropriate to the case. In addition, a course of more general and thorough friction should be instituted ; if the insensibility is persistent the blaze of a candle may be blown upon the skin with a blow pipe over the whole length of the spine. Injections of turpentine in small quantities may be tried, as well as the remedy said to be suggested by Dr. Cartwright of slapping the surface with a lady's slipper, in place of which I would suppose that a small bunch of elastic switches would be more efficient. In the event of all these measures failing, electricity may be tried, the lungs may be inflated as for asphyxia, and a powerful stimulant may be thrown into the stomach by the aid of the stomach pump and elastic tube, such as brandy toddy, or a solution of ammonia or camphor, etc.

The measures best calculated to prevent recurrences of syncope are such as will give tone to the general system, and allay the invariably attendant excessive irritability of the nerves. General tonics, such as the gin bitters, etc., and the decoction of cypripedium and scutellaria, may be mentioned as among the best remedies of which I have any knowledge. It will be necessary to regulate the habits properly both in respect to diet and exercise.

the large bronchial tubes. More or less water will generally be found partially filling the lungs. The right cavity of the heart, and the large venous trunks distributed to most of the large cavities, will be highly gorged with dark venous blood. This however will not be the case when the respiration has been arrested by fainting or otherwise before the submersion of the body.

The period during which the body can remain under water without a total extinction of life, is a question of some practical importance, since upon its determination may depend the continuance of our efforts at restoration. It is however one of those questions which does not admit of a precise and definite solution. But cases of so extreme a character have occurred that it behooves every physician, when the occasion requires, to continue his efforts for even a considerable time after all signs of animation have disappeared. The ability to remain under water varies, of course, like other physical powers, in different persons, and depends chiefly on the constitutional vigor and tenacity of life peculiar to each individual, as well as upon the greater or less exemption from pulmonary derangement. From two to six minutes may, perhaps, be considered the extremes during which persons may be submerged with a hope of resuscitation. Yet there are not wanting instances of considerable variance from these limits. The extreme cases mentioned by the authorities require the supposition of a very different state of the system to that which is ordinarily found to exist to render them credible or even possible. Upon the supposition of syncope before submersion, the body *might* be tenacious of life under water as long as it could be when otherwise situated. It is quite manifest, therefore, that those persons, reported by the authorities as having been submerged for half or three quarters of an hour, must necessarily have been previously in a state of syncope, of some similar condition. It is clear that this might occur, since there is scarcely a doubt that death, in cases of drowning, results from the deleterious influence of the carbon retained in the circulation, and as the circulation

sudden expansion of the air vesicles, which might rupture the air cells and thereby produce emphysema of the lungs.

These measures may be seconded by throwing up the bowels stimulating injections, such as a teaspoonful of the compound tincture of capsicum mixed with a teacupful of warm water.

2. *Asphyxia from strangulation.* The only cases of this kind in which you will ever be likely to be called on for medical services will be those of attempted suicide. The attempt being usually made with a handkerchief, or cord, the marks will generally be visible on the neck, though less so when strangulation is attempted without suspension. If no farther violence has been done than tightening a ligature sufficiently to produce strangulation, and especially if that be by a folded handkerchief, the marks of compression will shortly disappear upon the removal of the ligature. In such cases great tumescence of the veins will be observed, and appearances indicative of apoplexy will be particularly marked. In fact the apoplectic condition of the brain will be, in some rare cases, the immediate cause of the fatal result. This, however, occurs only when, from the arrangement of the cord, or from ossification of the larynx, complete occlusion is not produced. But when the obstruction to respiration is perfect, and the blood ceases to be vivified by the influence of atmospheric air, the immediate cause of death, it can scarcely be doubted, is very similar to, if not identical with, that of asphyxia from drowning. In cases of criminal executions by hanging, the weight of the body in the fall produces instantaneous dislocation of the neck and consequent injury of the spinal marrow. The terrible shock given to the nerves entirely paralyzes the whole system, and results in death.

It is evident that the lapse of time, between asphyxia from strangulation and the entire extinction of life, must vary greatly according to the circumstances of each case. Thus dislocation of the cervical vertebræ extinguishes life almost instantly, with scarcely a struggle, and probably with very little suffering. When the larynx is entirely closed without injury to the spinal cord, the fatal result is not so immediate, comes from a different cause, and is undoubtedly accompanied

by intense suffering and distress. When there is only an obstruction of the venous circulation, without a complete arrest of the respiratory movement, life may be prolonged for a considerable time and the subject finally recover. Instances are mentioned where, ossification having prevented occlusion of the larynx, the subject has been found alive after hanging a night, and others from like causes have survived a number of hours. A singular fact is mentioned by the authorities in connection with strangulation by hanging. It is said that there is often an excited condition of the genital organs, erection of the penis and seminal discharges. Various explanations have been given of this occurrence. But none occurs to me are satisfactory or physiological that do replace the paternity of the genital function in the base of the brain. The symptoms in these cases are, face always turgid and swollen, eyes open and prominent and the vessels of the conjunctiva injected, the mouth open and, often, the tongue protruding.

Treatment. Those cases suffering the penalty of the law by hanging are not legitimate subjects of medical skill, and if they were, there would be rare occasion for it, as this mode of execution almost always produces dislocation of the neck and immediate death. It is only in cases of attempted self-destruction, or possibly accidental strangulation, that you would be called to interpose your skill to restore suspended animation. In reference to which, Dr. Wood says, "the only measure requiring attention is the abstraction of blood." That it occurs to me is a most singular prescription. We have a subject to all appearances dead; the circulation completely arrested, the respiratory function suspended, and animation perfectly gone; all resulting from want of those changes produced in the blood by the action of the atmosphere during the respiratory process. It is certainly difficult to perceive the philosophy of that direction, in view of the cause of the difficulty, even if it were possible to draw blood. But we are met at the very commencement of the operation by the impossibility of filling a vein, because the circulation is suspended, and, if we should open a vein, but a few drops

most would be discharged; not enough to make the least impression on the circulation, and of necessity productive of no influence on the nervous system. Moreover if blood *could* be obtained by opening a vein, would it not be more reasonable to ply our remedies to remove the cause, and thereby change the condition of the blood? Let it be remembered that the cause of the difficulty is obstruction in the respiration, and a poisoned condition of the blood from deprivation of oxygen; the asphyxied condition is the immediate result of this state of the blood, and by exciting the respiratory movement the oxygenation of the blood will immediately commence, and will be perfected just as soon as the whole mass of the circulation has been brought properly within the influence of that important renovating function.

But admit that the compression of the veins has been disproportioned to that of the arteries, by which an undue quantity of blood has been retained in the vessels of the brain, and further, for argument's sake, that serious lesion might result to that organ before the change referred to would be perfected, unless some measure is instituted to relieve the engorgement; is bleeding the best, most safe, prompt, and reliable remedy? On this question I have no doubt. If the head is hot, a few cups applied to the temples or back of the neck, bathing with warm water, and gentle fanning, will usually be sufficient to answer the purpose. If, however, the case presents appearances of a more grave character, with strongly marked symptoms of venous congestion in the brain, ligatures to the extremities will answer all the purposes, and be equally as prompt and efficient as general blood-letting. It should be remarked that these measures, if necessary at all, will be so only after the respiratory and circulating functions have been restored by the use of the same means as prescribed for asphyxia from drowning or submersion, such as artificial respiration, external stimulation, friction, dry, warm clothing, stimulating injections, etc.

3. *Asphyxia from extreme cold.* The effects of cold upon the functions of animal life are similar to those we have been considering. After the painful feelings consequent upon the

cold to the whole system ; or respiration of carbonic gas—its proximate cause is identically the same, to-wit: the want of the proper decarbonization of the blood. And this proves beyond a doubt that, though the continued action of the heart or the circulation of the blood is indirectly dependent upon the functions of respiration and the changes wrought on the blood by that process, yet it does not, as has been supposed by Mrs. Willard and attempted to be proved by Dr. Cartwright, find its motive power in the lungs, any more than the functions of the liver or any other secretory and depurating functions of the body, are directly dependent upon respiration for the proper performance of their actions.

Let us examine this doctrine for a moment, since it is receiving its full share of attention in other quarters. The proposition, if I understand it, as laid down by Mrs. Willard and magnified by Dr. Cartwright, is that the “chief motive power” of the circulation resides in the lungs instead of the heart. The experiment made by Dr. Cartwright on the crocodile, of suspending animation by ligating the trachea of that cold blooded animal, and resuscitating it by inflating the lungs, has, in all its physiological and pathological phenomena, except the vivisection, a most perfect parallel in the different varieties of asphyxia produced by the dissimilar remote causes that we have been considering. Nor does the parallel stop here. The same measures that were resorted to and are so triumphantly heralded as having restored lost animation into the “sacrid saurian,” are those alone upon the use of which you can calculate for success in all forms of asphyxia.

Now these facts were known to the world long before the theory referred to had its advent, and were supposed to depend on the aëration of the blood and the generation of caloric, partly by the mechanical action produced in the lungs by insufflation, partly and mainly by the combination of the carbon of the blood with the oxygen of the air inhaled. The explanation, it is true, did not attach so much importance to the influences of the oxygen of the atmosphere thus introduced, as to suppose the “motive power” thus developed

was the sole agent necessary to the circulation, or that the blood, thus changed and put in motion either by the mechanical, chemical, or vital influence imparted to it, acquired the sublime properties of sensibility and thought. Undoubtedly the impetus given in the first instance to the capillary circulation by the vivifying influence of the atmosphere is a fact of vast importance, but I am unable to perceive wherein so much practical good is to result to the world from the announcement of the supposed "discovery." Surely there is nothing new in the theory that a large amount of free calor is the invariable result of respiration, and that a motive power produced by the expansive quality of heat is more or less operative in the phenomena of resuscitation in cases of asphyxia. Nor is it new that the first in the series of changes effected by the influences referred to, is more or less movement in the circulation of the capillary vessels of the lung. And it should not be overlooked that at this stage of the restorative process, the emptied condition of the vessels going to that portion of the heart, itself furnishes a satisfactory explanation of the movement upon a well known principle of hydraulics. It is also true that the vivification of the globules of the blood by the chemical changes of oxydation develops in them a latent motive principle, which will in part explain the movement observed by Dr. Cartwright in the capillary vessels of the exposed lung of the asphyxied crocodile. Moreover, the principle, known in philosophy as capillary attraction, and proved by Magendie to have an important influence on the circulation of blood in those minute tubes should not be overlooked in accounting for the changes which take place under the circumstances we are considering.

There was nothing in the experiments performed by Dr. Cartwright and others upon the saurian crocodile which developed any fact not previously known to the profession, unless we except the fact that this species of the animal creation would bear a mutilation which many others would not, and could be resuscitated from a state of asphyxia after the lapse of a much longer period than can be endured by the human species. Beyond this the experiments present no practical

truth bearing on the science of medicine, which was not as fully established by every case of asphyxia from any of the causes heretofore enumerated.

The cases cited, of animals having no heart, to prove that the motive power of the blood exists in the respiratory function, and the cases wherein the lungs were wanting, as well as the case of the fetal circulation in utero, cited to disprove the proposition, all equally leave the question where they find it, without affording an objection one way or the other. In both instances an apparatus is admitted to exist answering the purposes usually supplied by the organs which in such cases are deficient.

But suppose the theory that the motive power of the circulation resides in the lungs and is derived from respiration, to be correct, what are its claims for consideration in a practical point of view? Dr. Cartwright says: "Before the science of medicine can make much progress, or lend its all-important aid to a general and rational system of education—physical, moral and intellectual; before consumption, the bane of the progressive race of mankind, can be prevented, and the term of human life lengthened; and before the north and the south can be indissolubly united in the bands of perpetual amity and fraternity, * * * the motive powers of the circulation of the blood must be apprehended"! It is truly wonderful! And not the least remarkable feature connected with this new "discovery" is, that neither Mrs. Willard nor Dr. Cartwright, with all his astuteness and acknowledged capacity for metaphysical research, has been able to see, what everybody else sees, that the only discovery which has been made in the premises is a theory!

ANGINA PECTORIS, OR STERNALGIA.

I cannot doubt that the affection usually described as angina pectoris, and styled by Dr. Wood neuralgia of the heart, is in truth a nervous disease, having its origin or seat in the roots of the spinal nerves, and as I shall hereafter discuss the

for which the imagination of the sufferer has labored in vain to find terms of comparison sufficiently expressive. Along with the pain, in bad cases, there is often a sense of tightness or oppression in the chest, with dyspnea, inability to lie down, and sometimes violent palpitations; and the patient not unfrequently has the feeling that he cannot live unless speedily relieved. Though the breathing is apparently much oppressed and difficult, yet the lungs can generally be fully expanded by a voluntary effort. The pulse is usually small, irregular, and feeble, but sometimes strong and voluminous. Occasionally the paroxysm ends in convulsions or syncope. There is often much flatulence of stomach, and the urine during the paroxysm is pale and limpid."

As, however, the disease occasionally presents phenomena not altogether referable to spinal irritation, and requires some special attention unconnected with that disorder, a few remarks on the subject may not be out of place. Those cases which present evidences of local distress in the region of the heart, with other signs of cardiac disorder,—although the phenomena of organic disease may be wanting, and although irregular paroxysms may alternate with intervals exempt from both the local and general symptoms usually enumerated as characteristic of angina pectoris,—are yet, undoubtedly, cases of nervous affections of the heart. Having their remote origin in a highly exalted state of the sensibility of the cardiac nerves, they are liable to be developed by trivial causes operating on the circulation or the nervous system, and answer in every respect to a set of symptoms given by Dr. Wood.

"The first attack, which is in most cases comparatively mild, is usually experienced upon the occasion of some extraordinary exertion, such as ascending a height, especially in the face of a cold wind. The patient is suddenly seized with pain, and immediately stops, feeling that it is utterly impossible for him to advance, and as if he should die were he to make the effort. After a few minutes, however, the pain subsides, and he is enabled to proceed. The attack is afterward repeated, but at a very uncertain interval, after one or more weeks, for example, or months, or a year; but the

day, or every second or third day, coming on very gradually and increasing, for a time, until the distress of the patient reaches the highest point of endurance, then gradually subsiding, and finally leaving the patient free from any symptoms of disease, except a feeling of weakness consequent on the intense suffering just endured. The pulse, in these cases, will be somewhat irregular, sometimes slower than natural, and at others very rapid. In some cases febrile symptoms will be manifest, with a warm, dry skin, but a light colored urine, etc.; while in others, a cool skin and coldness of the extremities will characterize the paroxysm of suffering throughout. The pain in such cases will be mainly confined to the region of the heart, but will be accompanied by great restlessness, irregular respiration and sighing, and, in some cases, great oppression and difficulty of breathing.

Causes. The inference is obvious from what has already been said that any circumstances calculated to increase the irritability of the heart are liable to develop this disease. Thus any extraordinary muscular effort in irritable constitutions, such as rapidly ascending a hill or a high flight of stairs, hard lifting or severe tusseling, will produce it. It is liable to follow gouty and rheumatic disorders, is almost peculiar to advanced life, and is more common among males than females. It is frequently associated with, and no doubt produced by, organic diseases of the heart, and the symptoms growing out of it are among the most distressing and severe of any connected with those affections. But that form of the disease presenting the distinctly periodical character can scarcely be supposed to result from any other cause than that which produces other similar disorders, which is generally conceded to be vegetable malaria. The phenomena of the disease, as well as the results of treatment, point alike to the identity of the cause in this affection with that of intermittent and remittent fevers.

Diagnosis. Affections of the heart are generally characterized by well defined and unmistakable symptoms. But it is difficult sometimes to distinguish between the symptoms of organic and functional disorders, and nothing but the closest

the surface, and producing free perspiration, far overbalances any effect it may have on the action of the heart, while as an anodyne few remedies of the class equal it.

But in cases of a pale exsanguineous condition, the purgatives, and even the cupping, should be omitted, except a few dry cups may be thought advisable, while the anodynes, combined with a decided stimulant, should be repeated until relief is obtained. These measures in many cases may be aided by hot pediluvia, which may be rendered more effective by the addition of mustard or red pepper, and the application of extensive sinapisms over the region of the heart, and to the spine. The latter remedy, premising with cups and scarification to the spine, should be applied if irritation in the roots of the spinal nerves is thought to exist; and this may be almost taken for granted if a gouty or rheumatic state of the system is known to have characterized the case. When there are accumulations in the stomach, the first indication would be an emetic.

In the radical treatment of cases dependent on irritation of the cardiac nerves, the causes ascertained to be instrumental in exciting or producing the attack should be most studiously avoided; otherwise all curative measures will be of little avail. The causes therefore should be particularly inquired into, and satisfactorily determined, before you can prescribe with any certainty of success. The general health of the patient should also be attended to, as the most effectual mode of permanently removing local disorders. It is hardly necessary to repeat the particular directions adapted to this purpose; but while they are properly attended to, it may be advisable to make use of some local measures calculated to divert the irritation, and thereby remove the susceptibility to attacks from slight causes. The compound tar or irritating plaster may be applied over the heart, and one also to the spine, and continued until a free discharge is procured. The whole surface may be bathed in cold water, warm weak lye, or whisky and water, as may seem best for the case, while exercise in the open air, to the extent of the patient's strength without fatigue, should be particularly recommended. The

diet should receive attention, as the majority of patients in these cases are more or less the victims of indigestion from excesses of various kinds, especially in eating, and therefore require special instructions as to the kind and quantity of what they may be allowed to eat.

Cases exhibiting the periodical character already described should be treated mainly in the same way you would treat a case of intermittent fever, palliating with such measures as have been recommended for other modifications, during the paroxysm, and after it has passed off administering quinine and iron in such quantities as shall secure the system against recurrence of the attack. The time for its administration will depend somewhat upon the paroxysmal character or type of the disease. If the paroxysms recur every day, the quinine and iron should be commenced so as to administer fifteen or twenty grains of each, in three grain doses every two hours before the expected period of its recurrence; and about six hours before that time the patient should be advised to go to bed, and take a teaspoonful of the sudorific tincture in warm tea, and in an hour and a half to repeat the dose. In this way you may calculate with great certainty upon preventing the paroxysm, and thus cure your patient. It may be necessary in this, as in most other intermittent affections, to guard against periodical recurrences, when the patient resides in a malarial region. The measures heretofore recommended for intermittent fever will be equally applicable in this affection.

I might have remarked before, that the other types of the disease require the same medicines, only they may not be administered so soon after the decline of a paroxysm; but in every other respect the course is the same.

LECTURE LXVI.

ANEMIA, OR CHLOROSIS.

The subject limited—Distinguished from puerperal anemia—Quotation from Dr. Wood—Additional symptoms observed—Causes—Prognosis—Treatment.

That condition of the system, formerly designated by the terms *chlorosis* and *green sickness*, is considered by modern authors to be more appropriately styled *anemia*. By these terms is understood a morbid condition of the blood and especially a deficiency of its vital constituents.

In this connection I shall not consider those accidental aberrations from the normal state of the blood produced by its abstraction or by hemorrhages, nor those cases in which it becomes sensibly deficient from the effects of other and ordinary acute diseases. The condition of the blood in such cases is a natural consequence of protracted disease, and when the acute affection is removed a remarkable ability and tendency to repair deficiencies are generally shown. The division, therefore, of this disease into acute and chronic, made by some authors, I look upon as unnecessary, since that form described as acute is sufficiently considered in treating of convalescence in most acute diseases.

But there is a *distinction* which my experience has shown to be of great practical importance, and by attention to which, if I am not greatly mistaken, a number of valuable lives have been saved. The distinction to which I desire to call your attention is the difference between that form of this disease which was formerly designated by the term *chlorosis* or *green sickness*, and which chiefly affects young females, though not

confined to them, as it is occasionally met with in married women, and sometimes in men—and that other and far more common form connected with the *puerperal state*. The general appearances and most of the symptoms seem to be very much the same in these forms, but the results of treatment and the attendant circumstances have impressed my mind with the conviction that, though they both may be connected with the sexual functions, yet future research will determine them to be different diseases.

I have never met with a distinct history, or an accurate description, in any of the systematic works, of that modification of anemia dependent upon the *puerperal condition*. But in order to place the matter more distinctly before you, I will quote the main portion of Dr. Wood's description of the general form of the affection unconnected with the *puerperal state*, and will then endeavor to describe the symptoms and appearances connected with that condition, according to the best of my recollection.

Dr. Wood says: "When the complaint is fully formed there is commonly universal paleness of the skin; the lips, tongue, and mucous surfaces in general are also strikingly pale; there is extreme whiteness of the conjunctiva; and the whole surface of the body appears bloodless. Sometimes the face is yellowish or sallow, and has a waxen aspect. With the change of color there is often a puffiness of the face, especially of the eyelids: the skin seems translucent; and when the fingers are held up, the light shines through their edges. The extremities are apt to be edematous. The patient is feeble and cannot bear much exertion, to which also he is usually indisposed. The circulation is irregular, but almost always weak. The pulse is often full, frequent, and thrilling, vibrating as in aneurisms; but it is soft, and easily compressed, showing a want of energy in the heart's impulse. It is almost always greatly quickened by bodily exercise and mental emotion. When the patient is entirely quiet and in a recumbent posture, it is often small, rather slow, and feeble. Palpitation of the heart is a very common symptom. It is sometimes continuous, sometimes irregularly intermittent.

and may be induced by the slightest causes, mental or physical. Violent exertion often throws the heart into the most tumultuous action. Pulsation in the carotids is often obvious, and the stethoscope applied over these arteries or the subclavians, discovers almost always morbid sounds, such as the bellows murmur; while the large veins, as the jugulars, yield the humming-top sound. The respiration, though quiet when the patient is at rest, becomes hurried and even painfully agitated under exertion,—as in running, ascending heights, etc. The nervous system is often greatly disordered. Vertigo, dizziness, and a feeling of faintness, are very common; and spasmodic movements of the muscles, sometimes amounting to convulsions, are not unfrequent, especially in females. Violent and obstinate neuralgic pains in the head, side, breast, or other parts of the body, are also frequent attendants upon the disease. The secretions are sometimes diminished; and, associated with this condition, are extraordinary dryness of the skin, brittleness of the nails and harshness of the hair. In other cases, on the contrary, there are profuse and exhausting sweats. In females, the menses are almost always either altogether wanting, or greatly deficient, being scanty and light colored, or even serous. The bile is also frequently scanty; and costiveness, with unhealthy alvine evacuations, and a dyspeptic state of stomach, are extremely common symptoms.

“When blood is drawn, it is found to be much lighter colored than in health; sometimes appearing like dish-water. Upon coagulation, it exhibits a great excess of serum; the clot being very small, of a light reddish or rosy tinge, instead of the deep redness of health, and floating in an abundance of nearly or quite colorless liquid. It is, however, usually rather firm, and not unfrequently exhibits a buffy and even cupped surface. The proportion of red corpuscles is evidently much diminished; and the same is probably the case, to a certain extent, with the fibrin; for though Andral states as the result of his experiments that the fibrin and albumen are in the normal proportion in spontaneous anemia, this remark is not applicable to cases which result from repeated hemorrhage,

and, even in the former case, considering the occasional excessive diminutiveness of the coagulum, can hardly be received as of universal application, unless after a much more extended series of observation. It must be admitted, however, that there is usually a great deficiency of red corpuscles, not only in relation to the watery portion of the blood, but also to the remaining solid constituents. Even in the anemia from hemorrhage, this relative deficiency is observable; for, though all the constituents are lost in the same proportion, yet the organs concerned in the production of blood find in the system much larger supplies of the albuminous and fibriniferous principles than of those which constitute the red corpuscles, and besides, as these probably are a higher result of vital organization, they must be the last to be generated. The cause of the buffy coat of the clot in anemia is the relative excess of the fibrin over the red globules. It is altogether independent of inflammation.

"It has been stated that a bellows sound is heard when the stethoscope is applied over the large arteries of the neck. The same sound is in a less degree heard in the heart. Andral asserts that it is never absent in true anemia, and that it is inseparably associated with a diminution in the due proportion of the red corpuscles. He never met with it in cases in which the proportion of fibrin or of albumen alone was lessened. The degree and continuance of the sound bears some relation, though not a constant one, to the diminution of the corpuscles. Supposing the mean proportion of the corpuscles to be 125 in health, Andral found that the bellows sound exists constantly in the arteries, when the proportion is reduced below eighty, occasionally when it falls between that number and the physiological mean, and not at all when it exceeds the latter point. Some inference may thus be drawn as to the degree in which the blood is impoverished in anemia. The commencement of the affection may thus also be detected before it has begun to exhibit itself by its characteristic feature of paleness. Occasionally persons with a rather florid complexion exhibit many of the symptoms of anemia, such as the debility, the feebleness and excitability of the pul-

the palpitation and hurried respiration during exertion, etc. In these it would be difficult to verify the existence of the affection unless by the means afforded by auscultation.

“In that form of anemia commonly called *chlorosis*, the subjects are usually girls between the periods of puberty and maturity. The complaint is in most cases very gradual in its advance, and is often from the beginning attended with deranged digestion and costiveness. The appetite is irregular, sometimes defective, sometimes excessive, and occasionally morbid in its preferences for particular substances. The breath is often offensive. Listlessness, indisposition to exertion, and an expression of sadness or dejection, are not unfrequent features of the disease in its earlier stage. The complexion gradually fades, until at length it becomes of a pale, sickly hue, with a yellowish or greenish tinge, which has given rise to the name of the complaint. The other symptoms already enumerated are slowly developed. The menses either do not make their appearance, or if they have occurred, gradually undergo diminution in color and amount until they entirely cease. The nervous symptoms are peculiarly prominent, and the patient is not unfrequently afflicted with all the harassing train of hysterical disorders.”

This description, according to my observation, is correct so far as regards the symptoms met with in ordinary cases, and indeed the general symptoms of puerperal anemia are correctly given. Yet some of an essential character are entirely omitted, whether because that learned author never observed them, or, observing them, did not consider them of sufficient importance to be noticed, I am unable to say; though I am well convinced that, if they had been pointed out, and the distinction to which I allude had been clearly noted by earlier writers, many valuable lives might have been saved to comfort helpless offspring and benefit the world.

The *symptoms* of this modification sometimes appear previous to confinement, and gradually, though not rapidly, increase, until that period when, if the system does not rally from the shock given by that change, all the symptoms rapidly become worse, and the patient sinks unless appropriate treat-

frequency, in some instances oppressed and sighing, with frequent attacks of dyspnea, especially upon any exertion. An attempt to rise up frequently produces a temporary blindness and severe, shooting pains through the head.

The stomach is generally irritable, especially late in the progress of the disease, sometimes rejecting almost everything put into it, and always tender upon pressure on the epigastrium. The bowels also are always irritable, and generally a thin, dirty-yellow and offensive diarrhea accompanies the case throughout; sometimes the bowels are costive, but always sensitive to medicine, continuing to operate upon the administration of the mildest aperient for a number of days. In some cases great complaint is made of soreness of the throat and also of the mouth, but upon examination little evidence of disease will be found, often not at all commensurate with the complaints made. Bleeding at the nose is a frequent symptom, while the blood is often scarcely red enough to color white cloth. The secretion of milk is always greatly diminished, and often nearly wanting, while the lochial discharge is very little disturbed, though occasionally less than natural.

These then are the general and most prominent symptoms of puerperal anemia, though without doubt others of a *common* character may be observed. It will be noticed, as I have before remarked, that the great, leading symptoms of puerperal anemia are the same as those of chlorosis, but you will not fail to discover a difference, in some respects, of an important character. Yet, in a mere symptomalogical point of view, it might be questioned whether any more marked difference was presented between these modifications, than might be fairly referable to the peculiar conditions of the systems in the two cases; in other words, whether the puerperal state did not present inherent peculiarities adequate to account for the symptoms associated with it which differed from those unconnected with that state, without reference to any pathological differences in the nature of the two affections. Furthermore, while puerperal anemia is most clearly connected, in some way, with the procreative functions, I have never yet

fold evils growing out of these abuses. The importance of this subject has not been properly appreciated by systematic medical writers, or else feelings of delicacy have deterred them from discussing the subject as its importance demands. But in my opinion true science is not squeamish, nor will it sacrifice the highest interests of humanity to a false modesty. I therefore deem no apology necessary for introducing the following remarks :

“ How limited,” says a medical writer, “ is our knowledge of the pathological character of these troubles ? How little we know of their existence, and how frequently they elude our research ? The veil of secrecy and shame-faced denial hides them from our view. They are produced by personal gratification and perverted action of the strongest passions of the animal system ; a passion that overrides all other physical powers, and is the basis of all earthly affections and sympathies of the heart. It partakes of all the characteristics of forbidden fruit, and is heightened by the imaginings of a perverted imagination. It is the seat of the ‘ one idea ’ that dethrones reason, and fills our lunatic asylums with their inmates. It is also the source from ‘ whence the darker passions ’ flow, as the prisons and the gallows can assert. The grave of the suicide can bear witness to the same truth. The poet and the novelist have made this giant their theme, and portrayed his power for the weal or woe of mankind ; but the medical philosopher has neglected to cultivate his acquaintance. He has been suffered to secrete himself among the moral affections, and has seldom been dragged forth to answer for the deeds done in the body ! It is time these organs, so far as reproduction is concerned, should be thoroughly studied, and their pathological influences clearly developed. But the passions and appetites which lie behind them are almost entirely hidden from our view. Their use or abuse have seldom been referred to as the origin of diseased action. The world sneers at and ridicules the suspicion that health is affected by their indulgence, and the physician is apt to join in the cry and refuse to give the matter serious consideration. We hardly know

the chyloferous absorbents, by which the blood is prevented from being replenished, and consequently very soon presents the deteriorated and impoverished condition universally found in this affection, we are still left to conjecture what relation that deficient action in the chyle vessels bears to the puerperal state, or in what way this morbid action is connected with gestation or lactation. Nor do the morbid phenomena growing out of the affection throw any light on its connection with the puerperal state. Yet it has been too often observed in connection with that condition—rarely if ever with any other state of the system—to render the relation a doubtful one.

What relation, then, do they bear to each other? I have but a single suggestion to make in answer to this question. There can be no doubt that the two functions of gestation and lactation have an important sympathetic connection with the chyloferous absorbents, and perhaps with nutrition. Hence during pregnancy, and especially in its early stages, before the demand is great for the fetal growth, the appetite is increased, and an inordinate action in the absorption of nutriment is palpable, as shown by the accumulation of blood and flesh. This goes on increasing, though not quite so rapidly, perhaps, in the latter stages when the supply is more largely appropriated for the increasing growth of the uterine contents. Nor does this extraordinary action always stop upon parturition, as many females continue to increase in size, notwithstanding the increased demand upon the system for the lactiferous supply; thus showing that there is an unusual action in the chyloferous absorbents. This, I think, cannot be questioned. And upon the well known principle that excess of action is followed by loss of action, the absorbents become sluggish, the usual supplies are cut off, and all the train of symptoms ensue. In this way long continued overaction of the liver in the secretion of bile is liable to be followed by a corresponding inactivity; and so of every other animal function.

We conclude, therefore, that every symptom of the disease shows beyond a doubt that it consists essentially in an

the disease, it would naturally be inferred that a different course of treatment would be required for each. Such are the results of my experience. In the chlorotic form of anemia, the first and most important point is to put a stop to those secret habits which have largely contributed to its production. It will often require no little adroitness and skill, on the part of the practitioner, to approach the subject without repulsing the patient, and thus losing the opportunity of enforcing the indispensable necessity of reform. Even in the cases of males I have frequently been met, in the beginning, with the most positive denials ; but after acquiring their confidence have finally drawn forth admissions to the fullest extent. And here let me remark that patients in such cases are apt to be extremely shy and suspicious, morbidly sensitive, and fearful of ridicule or contempt—feelings which are naturally intensified by a painful sense of self-abasement. It is therefore exceedingly difficult to approach them, while, at the same time, they will perhaps have an intense longing for the profound confidence of a good friend who could aid them to escape from their debasing thralldom, and would be glad to receive advances made in the spirit of true kindness and sympathy, especially if accompanied with positive or implied assurances of entire secrecy.

After giving this matter your first attention, appropriate measures should be instituted to remove any other apparent or real aberrations. Thus if the menstrual secretion is irregular, or entirely suppressed, or has improperly never taken place, in either case the remedies best calculated to increase or restore the secretion to a healthy condition will be necessary. To fulfill these indications—all being essentially the same—a pill composed as follows may be given night and morning, or often enough to secure a free action of the bowels once or twice in the twenty-four hours, to wit:

R Aloe, gnaiac. res. myrrha,
Ferri sulph: in pulv. aa.
Alcoholic ext. macrotys rac., q. s.

Make pills of usual size.

throbbing in the head are well calculated to deceive the inexperienced practitioner, and lead him to institute a course of treatment for excessive action and repletion, rather than for extreme debility and its frequent attendant irritation. The appearance of the tongue, and the attenuated and pale condition of the blood, immediately suggest the administration of chalybeates and mild farinaceous food as the appropriate measures; and I confess that my early practice began with high hopes of satisfactory results from this course. But the rapid decline and fatal termination of most of the cases thus medicated soon convinced me of the deceptive character of the symptoms, and the unfitness of the treatment. Afterward, adopting the view that exhaustion and debility was the essential character of the case, I pursued a general restorative and more stimulant course with far greater success, and with few fatal terminations.

It is true the diet at first must be restricted to very simple articles, but they must be stimulating and highly nutritious. Small pieces of tender steak, put in an empty bottle, which must be corked and boiled in a kettle of water, will yield a highly concentrated and nutritious extract, which, taken in small quantities, will be easily digested and very nourishing. This may be given in dessertspoonful doses every hour, and gradually increased until other and more gross food can be safely substituted. I have witnessed good effects from the use of egg-nog, prepared from eggs, rich milk, a little pale brandy and sufficient sugar, and given in quantities suited to the case, say a tablespoonful at a time every few hours. Its stimulant and nutritious qualities may at first produce slightly increased action, but this will soon subside, and the system be strengthened and refreshed. Rare done beef chewed, without swallowing the substance, will be a very good article of diet, and as the strength improves, and the stomach becomes able to tolerate more and a greater variety of food, roasted potatoes, venison steak, rice puddings, and such other articles as experience and the habits of the patient will suggest, may be allowed. In connection with these articles, I have

the best of the kind. After the absorbents have been roused to increased action, and the blood somewhat replenished, this preparation will most unquestionably impart a more healthy quality to the circulating fluid, and thereby increase its action in the capillary vessels. But until the intestinal absorbents shall have been stimulated to an increased and more healthy action, it will be vain to hope for good results from a remedy only beneficial by the change it may work upon the constituency of the blood after it is absorbed.

vegetables, which abound in certain proximate principles or elementary substances necessary to the health of the system. It therefore becomes highly important that a knowledge of the circumstances favorable to its production, and of the measures best calculated to remove it, should be as general and widespread as the human family.

Until within a short period the medical authorities taught the doctrine that scurvy was somewhat peculiar to cold climates, and was mainly produced by the use of salted and putrescent meat. Even Dr. Eberle says, "the exciting causes are the habitual use of innutritious, unwholesome, or an exclusive *salt animal* or *vegetable* diet," clearly intimating that the excessive use of salt was the main, if not the exclusive, exciting cause. This view of the subject seemed to be sustained by the most prominent fact observed in connection with the disease. It had been observed to prevail most among armies and at sea among sailors, confined for a long period to an exclusively salt animal diet and hard biscuit bread,—and hence the above conclusion in regard to its cause, overlooking other facts which point as strongly in another direction. It has been shown that it may occur among those whose exclusive food is fresh meat, and that patients affected with the disease will recover by the liberal use of salt meat, if supplied with a proper proportion of fresh vegetable food. "The soldiers in the Russian armies, who, in the early part of last century suffered greatly from scurvy, had no salt provisions." "In the middle of last century, when Sisinghurst castle in Kent was filled with French prisoners, scurvy broke out among them, although from the time of their arrival in England they had eaten no salt provisions, but had been served daily with fresh meat and bread, but without greens or other vegetables." "The preceding instances are sufficient to show that scurvy may arise independently of the use of salt provisions; there are other facts which lead to the conviction that salt has no influence whatever in producing it." (*Tweedie.*) Workmen engaged in the manufacture of salt, and who labor night and day, and even live in salt mines in which the atmosphere must be highly charged with salt

articles necessary to health and confined to those which are fully shown to produce scurvy, would, no doubt, have the disease sooner developed, and it would be more obstinate and fatal in such cases, than if differently situated. Any circumstances which have a debilitating and enervating effect may contribute to the development of any disease, however variant the exciting or main producing cause may be from those circumstances. Tweedie says, "when a number of persons are placed in circumstances conducive to scurvy, the first to exhibit its symptoms are those who, from sickness or other causes, are in a state of debility."

The theories in regard to scurvy are various and conflicting. Other circumstances or influences than those already mentioned, closely connected with the first appearance of the disease, have been assigned as causes. Thus cold and moisture have both been supposed to favor its production, an inference which at one time was supposed to be justified by the apparently more common prevalence of scurvy in northern latitudes, and at seasons of the year when moisture abounded in the atmosphere. Dr. Lind says, "that channel cruisers were often quickly overrun with scurvy, while their consorts, fitted out at the same ports, and consequently with provisions and water of like quality, who soon after left them for a much longer cruise off the Canaries or Cadiz, or a voyage to the Indies, kept pretty free from it, and that it always appeared in much shorter time, and raged with greater violence, in a squadron cruising in the narrow seas of the Baltic and Channel, or upon the coast of Norway or Hudson's Bay, than in another continuing the same length of time in the middle of the Atlantic Ocean." "Sir G. Blane expresses the same opinion, which seems, however, to have been refuted by his own experience while physician to the fleet in the West Indies." Dr. Tweedie says, "an attentive consideration of the history of scurvy has convinced us that the influence of these causes has been much overrated, and that the comparative immunity from this disease formerly enjoyed by fleets in warm latitudes was mainly owing to supplies of oranges and other fruits with which Cadiz, Madeira, or the islands of the

fruit, or their preserved juices, as an article of food. Where this condition is fulfilled, we find scurvy arising in persons whose situations are the most various in every respect in which we can compare them, while not a single instance can be cited of its occurring in a person well supplied with these vegetables or fruits. This circumstance, together with the fact that scurvy is in all cases rapidly cured when a supply of these vegetables or fruits is furnished, leads us to consider the abstinence in question as its essential and sole cause.”—(*Tweedie.*)

Nature. The history of the disease, the symptoms it presents, its well determined cause, and all the phenomena connected with it, concur to show that the essential nature of scurvy is a vitiated condition of the blood. But in what this deterioration specially consists, whether in the loss of some of its plastic elements—thus rendering it less coagulable and affecting its circulation in the capillary vessels; or whether in an increase of the saline ingredients—thereby diminishing its vital properties, and favoring local engorgement and effusion; or whether it consists in a change, not readily recognized nor easily appreciated, either in the due proportion of the red corpuscles, or in their molecular formation, are questions that future research alone can answer. It is not easy to say, from what authors have written on the subject, whether any of the changes referred to are determined to take place in scurvy, since scarcely any two observers have recorded the same facts in the cases occurring in their experience. The most modern scientific statements, however, seem to have determined that neither the amount of fibrin nor albumen are essentially altered from their normal proportions, though the fibrin shows a slight increase, while the red corpuscles are greatly diminished, and the saline ingredients are essentially the same in their proportions as in health. Thus while chemistry seems to have given us all the light which that department could be expected to afford, it has failed to develop those suggestive practical truths so desirable in the case. And though the microscope has not been neglected in this interesting and somewhat important topic, yet the facts which it belongs to

said to bear that relation to the disordered action which will entitle them to rank in the list of scientific truths.

Symptoms. A disease which, like this, depends entirely upon the changes produced in the blood by the slow process of waste of certain principles without the usual supply, must necessarily be very gradual in its approach, and the symptoms connected with it must follow in progressive groups until life is destroyed, or the remedy is furnished to stay its progress and counteract its effects. Among the earliest manifestations of the disease is a change in the complexion from a healthy to a pale and sallow, or slightly dark and sickly hue. Accompanying this manifestation of deranged action of the system, is a feeling of debility and languor, with a tendency to lowness of spirits and extreme aversion to any kind of action, either physical or mental, upon the occurrence of either of which to any great extent the patient is very apt to complain of fatigue, thus showing that the great fountain of health, strength and life is impaired.

Soon after these general evidences of disease are manifest, symptoms more particularly diagnostic begin to appear; the gums become swollen and begin to exhibit a dark color, a sore and tender sensation is complained of, and they are apt to bleed on the least touch. Upon examination, they present a livid and spongy appearance, and are often loose or partly detached, while the lips, tongue and inside of the cheeks present a more pale and bloodless aspect than in health.

As the derangement of the blood increases, all the symptoms show a corresponding aggravation; the complexion exhibits a more dusky hue, and a general debility rapidly increases so that the slightest exertion produces a breathless exhaustion, often followed by palpitation of the heart; and if an over-effort has been made, a state of syncope may follow of an alarming character. The local symptoms fully keep pace with the general; the gums appear more spongy, swell enormously, and become purple and almost black, entirely covering the teeth or showing merely the ends; the teeth become loose and not unfrequently drop out, or are picked out with the fingers as a nuisance; the breath becomes offensive,

departs; or perhaps local engorgement of some important organ occurs and destroys life before a complete contamination takes place.

The tongue in most cases throughout the complaint is free from fur, and the appetite is good, the patient often taking food with as much relish as in perfect health, but, owing to tenderness of the gums and teeth, patients are deprived the pleasure of indulging in anything more than some simple and farinaceous substances. The demand, however, is none the less, and at times is even painful, especially for those articles required by the system to counteract the morbid action going on. But in some cases the stomach becomes involved, and nausea and vomiting produce severe and prostrating effects. The bowels are sometimes loose, often discharging dark, coagulated blood; but more commonly they are costive, and occasionally obstinate constipation, with difficulty in evacuating, attends the case. The pulse is generally feeble, rarely excited, but most frequently slower than in health; while the skin is cooler than natural, with cold extremities. But if local inflammatory action occurs, we should expect to find a hot skin and excited pulse. The urine is diminished in quantity, and generally red or high-colored, and occasionally mixed with blood. With all these symptoms of general disease it could scarcely be otherwise than that emaciation should rapidly take place.

Few diseases present a more variable character than scurvy. Sometimes it breaks out quite suddenly, runs its course with great malignancy, and terminates fatally in a short period. But most generally it approaches insidiously, and pursues its course with a gradual increase in the accumulating and progressive symptoms, until the circumstances of the case change or the system sinks under the weight of the morbid action. The difference in these respects is no doubt owing to natural vigor of constitution, or to the weak and exhausted powers of the system, or to the degree and extent of the cause that produces the disease. It no doubt is more violent and severe when epidemic influences co-operate in its production, and it is said also to have manifested a greater malignancy at sea than on land, owing most likely to the greater difficulty of

with dark blood, and frequently softened. The mucous membranes present a blanched or pale appearance where they have not been percolated by the diffused blood, and the texture of the muscles in general and the heart in particular is soft and flabby; in short the whole system presents the relaxed and exhausted state which the symptoms during life would naturally suggest.

Causes. I have already sufficiently considered the causes which it has been generally decided, from experience, are instrumental in producing the affection, and will only allude to them again in passing. They are not of a *positive* character operating directly upon the system. The cause of the disease is rather a negative influence, being the *want* of those articles of food which furnish the system, through the medium of the blood, with certain elements indispensable to life and health. I need not repeat that it is not at present known precisely what those elements are; but common observation has determined that they must exist in certain kinds of succulent fruits and vegetables ordinarily used, and making up an indispensable part of our sustenance. And when from accident or otherwise we are deprived of them for any considerable length of time, whether the food actually used consists largely either of fresh or salt animal food and hard bread, scurvy will ensue.

Diagnosis. An eruptive disease, characterized by peculiar purple spots called purpura, is the only disease with which scurvy is liable to be confounded, and then only by the similarity in the appearance of the petechial spots common to both. When the general symptoms peculiar to each of these affections are properly considered, little difficulty will be experienced. It will suffice to state that the leading symptoms of scurvy, not connected with purpura, are, the swollen and livid gums, the sallow and dusky skin, and frequent hemorrhages from the nose and other parts. These, with the history of the case, may be relied on to distinguish the disorders.

Treatment. I suppose I might leave the treatment of scurvy to be inferred from what has already been said in relation to its cause and history. It will be proper, however, to

would scarcely be imagined by persons who have not witnessed it. In the course of a few days, the complexion loses its sallow and dusky hue ; the gums become firm and florid ; the petechia and bruise-marks on the skin disappear ; the legs, if swollen and rigid, begin to regain their natural size and pliancy ; despondency and muscular weakness are replaced by cheerfulness and a feeling of strength ; in fact the aspect and condition of the patient soon betoken the return of health." In addition to or in the absence of these, many acidulous fruits, such as apples, peaches, strawberries, and particularly unripe grapes, and the like, have been found from experience to possess excellent antiscorbutic properties, and may be used in almost any case with good effect.

Next to the orange class of remedies, fresh vegetables and especially the cruciferæ, or some portion of that class of plants, are more particularly recommended and used in this disease. Among these may be mentioned cabbage, turnips, radishes, horseradish, watercress and the like, as opportunities may be afforded to procure them. The cabbage in particular seems to have been found a valuable remedy, and may be used in the raw state, in the form of coldslaw with vinegar, or in the form of sourcroust. Potatoes, also, both cooked and raw, have been used, and have been particularly recommended in the raw state by being grated and used with vinegar. But in institutions where the scurvy is liable to prevail, the boiled potato is most relied on as a prophylactic, being supposed, and no doubt with truth, to possess valuable preventive antiscorbutic properties. It is stated that, since the introduction of the potato as a regular article of diet in many institutions of the old world, where scurvy was apt to prevail and occasionally to an alarming extent, the disease has become unknown, and it is also supposed that its decrease among the poor of those countries, where it often prevailed to a fatal degree, is referable to the same cause.

Besides the vegetables thus enumerated, other articles prepared from the farinaceous grains will be useful ; such as the infusion of malts, or some of the fermented liquors, as ale, beer, and sour wines. Molasses, also, has been administered

as convenience and circumstances will permit, such as potatoes, cabbage, turnips, etc. ; and if the system is greatly debilitated and exhausted, the moderate use of beer, ale, cider, or such other direct stimulants as may best suit the character of the case, and may be found most congenial to the taste and habits of the individual.

PURPURA—PETECHIA, OR HEMORRHEA PETECHIALIS.

Symptoms. This is a disease of the skin, and is characterized by irregular patches of different sizes varying from a mere point to the tigness of a half dollar and sometimes even larger, of a dark or purple color, and permanent though disappearing for the moment under pressure. These spots not only appear on the skin, but are sometimes seen on mucous surfaces, especially the nose and inner parts of the cheeks, and no doubt also exist in the bowels and lungs. They are often attendant symptoms of other affections, especially congestive and malignant fevers and dysenteries, in which a decomposed or greatly altered state of the blood exists. But the affection I am now considering occurs independently of other *particular* disorders, though I entertain little doubt that a somewhat similar condition of the blood and blood vessels exists in both cases. Most authors have generally considered purpura in the class of eruptive diseases ; but it has so little of the character of those diseases, and in fact so little of an independent character at all, that I see no sufficient reasons for placing it in any distinct class, and scarcely for elevating it to a separate consideration. As however I have been called to prescribe for it in a number of instances, I will notice it briefly.

It seems to be in some way *connected with the condition of the blood*, as all the cases that have come under my notice have presented unmistakable evidences of previous derangement of the system and apparent disorder of the blood. Accompanying such cases will be found a languid and debilitated state of the system, an inability or disinclination to exercise, a dusky paleness, and a feeble pulse, somewhat increased in

frequency. The tongue is usually coated, the appetite ~~is~~ and the bowels confined. Not unfrequently the appearance of the spots is preceded or accompanied by slight chilly sensations, pain in the back, head, and limbs, and is often followed by some heat of the skin upon the body, though extremities are cold, and by other symptoms similar to ordinary attacks of fever. But other cases occur without the general evidences of acute disease, and only present symptoms of general debility and derangement, occurring in a very gradual and almost imperceptible manner.

The spots appear first upon the lower extremities about ankles and feet, and afterward extend to the body and upper extremities. When they appear gradually and without any general disturbance, the petechia are confined to the feet and legs. According to tradition they usually occur at night, are first seen in the morning, and Professor Wood thinks "statement is undoubtedly correct; as it is in the morning generally the legs are seen bare," which naturally suggests the reflection, that if they are bare in the morning they were probably made so in the evening! As already remarked, the size and appearance of the eruptions vary in different cases, in some being quite small and in others again much larger; they are sometimes nearly circular, but more generally long, notched, and irregular. The color also varies, in some cases being of a dark purple hue, in others at first of a bright red, but gradually assuming a dark purple or brown color and fading into a yellowish green, as in the disappearance of a bruise. These spots rarely occur all at once, but as some are subsiding others are beginning to be seen, and thus they continue, gradually lessening in the successive crops until at length they disappear entirely. They are generally without pain or sensibility, and without any increase in the temperature of the parts; being on the contrary even colder than natural. Sometimes, however, they are hot and painful, and exceedingly tender, producing lameness or inability to walk, and present the appearance of bulla without the bleb and without little or no tendency to the formation of matter. They sometimes present a distinct hemorrhagic tendency, with peror-

ble accumulations of blood blisters, and I have seen a number of instances in which the eyes were affected. The cases presenting the hemorrhagic character are liable to be accompanied with bloody discharges from the bowels, especially if drastic medicine be administered, and it is said that hemorrhage occasionally takes place from serous surfaces, as in the pericardium and pleural cavity.

The *duration* of the disorder depends much upon the extent of derangement connected with it. In the main it may be said to be somewhat slow and tedious, though attended with but little if any danger. Females are more subject to the complaint than males, and most cases that have occurred in my practice have been those of young ladies just emerging into womanhood, but subject either to irregularity in the menstrual discharge, or in whom it had never appeared. But these petechial spots sometimes appear upon persons greatly advanced in life, especially females who take but little exercise, and in whom a vitiated condition of the blood takes place from accumulation of carbonaceous elements, and stale and effete materials, but who present in other respects no evidences of derangement, and from whom they often disappear without any assignable cause, unless perhaps from taking more exercise than usual in the open air.

The character of this eruption, if it may be so called, is an extravasation of blood immediately under the cuticle, which can be washed off after death without leaving any marks of disorganization or inflammatory action so far as ordinary observation can discover. The same appearances are also observed upon portions of the mucous membrane; extravasated blood is found immediately under the epithelial membrane, but not diffused into the cellular structure or the mucous tissues. The blood is often found in a thinner or more fluid state than natural, but in other cases presenting a dark grumous character.

Causes. In reflecting upon the cases which have come under my own observation, but a single suggestion has appeared to me to account for them in any satisfactory way. In all those cases inactive secretions attendant upon sedentary

habits, and a very sensible derangement been produced by a want of the necessity to eliminate the effete matter resulting from growth and repair. The same causes produce irregularity in the menstrual functions, contribute to the production of this disease, may also obstruct the appearance of it, and interrupt its regular return at the proper time. It derange the system directly by failing to perform its destined to contribute to a healthy state, and also produce a sympathetic disturbance of other functions and thereby indirectly aid in the progress of diseases first originating in this cause. It is apparent in two or three cases that caution in which, after other treatment has failed for relief, the petechia disappeared directly after the evacuation, or upon its appearance was delayed. Other influences producing diseases of the blood may no doubt develop this disease in indolent habits, little attention to cleanliness, indulgence in eating and drinking, will produce diseases of the blood resulting in petechial spots. As I have myself seen. And aged persons, who are rendered incapable of taking exercise, and a full habit of living, are very liable to diseases of the blood resulting in a scaly eruption of spots upon the legs and hands. In these cases we usually find a morbid and deranged action of the system, not only of the excreting and assimilating functions, producing both a diseased and impoverished condition of the blood. In such general symptoms of diseased action, an increased tendency, will be found to exist. The result attendant upon such cases, the thin and watery state of the blood, and the state of the coats of the vessels through which it circulates, all combine to facilitate the escape of blood through the walls of its prison, or rupture of its tunics, but by percolation.

result would be greatly favored by an excess of the red corpuscles which is generally found to exist in these hemorrhagic systems. But in other cases where there is an accumulation of morbid matter without any deficiency in the healthy ingredients of the blood, where there is a more passive state of the system, and the petechia show no tendency to occur to any considerable extent, I have no doubt that a careful examination would discover a rupture in some of the minute vessels involved in the petechial spots.

Diagnosis. When treating upon the subject of scurvy, I remarked that this disorder was the only one with which it was liable to be confounded. So, conversely, scurvy is about the only disease that bears any resemblance to purpura, and the distinctive and characteristic symptoms of scurvy, which never occur in this affection, are sufficient to distinguish them without any difficulty, if care is observed in the investigation. Purpura does, without doubt, bear that relation to scurvy which results from a similar condition of the blood, with the exception that the elements furnished by the substances found to be curative in scurvy, and the want of which gives the latter disease its character, are not absent in the former.

Treatment. In treating purpura it is equally important as in other cases to ascertain the remote or exciting cause of the disease. If it has been brought on by irregularity in the menstrual secretion, the means best calculated to restore it should at once be adopted. Various emmenagogue preparations have been recommended, but as I have most generally been successful with the pill heretofore recommended for a similar purpose, containing iron, myrrh, guaiacum, macrotys, and some other ingredients, I could scarcely omit to mention this as the first to be tried. The pills should be given so as to produce a free condition of the bowels, guarding against a too active purging. Where the derangement of this function, as will generally be found to be the case, has been brought on by other disturbances, or by want of appropriate exercise, little will avail from any remedies if the influences that originally produced it are allowed to continue. In such cases, therefore, as much exercise in the open air as the

alterative syrup, efficient bathing, and active exercise, if the patient can bear it, in the open air. These measures will frequently be found sufficient to correct the vitiated condition of the blood, and will also generally be followed by a restoration of the catamenial evacuation.

If hemorrhage from the bowels should be one of the attending symptoms, care will have to be observed in the administration of purgatives, and if a looseness or relaxation of the bowels exists, mild astringents and tonics will be found necessary. The decoction of static limonium may be given in tablespoonful doses every second hour, or if this cannot readily be obtained, a similar preparation of the geranium, or an infusion of raspberry leaves may be given in wineglassful doses, as often as the discharges may seem to require.

For local applications, I have found those cases presenting coldness of the extremities and but little or no soreness in the petechial spots, greatly benefited, the color changing to a more bright and florid appearance and the warmth restored to the parts, by washing the parts affected twice a day in hot whisky and cayenne pepper. But when there is accompanying soreness and heat, great relief will be obtained by wrapping the parts affected with towels wrung out of cold water and changed once in three or four hours.

legitimately belong to our present subject; yet the great range of the class of affections I am now considering presents no appreciable alteration of structure to show the origin of the effused blood. Thus we often have profuse discharges, even to a fatal termination, in which the most careful post mortem inspection fails to discover any appreciable structural lesion. Bichat and numerous other writers have shown that most cases of spontaneous hemorrhages are the result of what has been called an "exhalation" from the ultimate ramifications of the minute blood vessels which constitute the capillary system." If positive demonstration did not show beyond a doubt that profuse and exhausting evacuations of the kind did occur, it might be difficult to reconcile such instances to our apprehension of the phenomena. In fact a majority of the world at large, and probably some of the profession are impressed with the belief that nearly all hemorrhages of this kind depend upon a rupture, more or less important, in the coats of the vessels affording the discharge. But Bichat states "that he had opened the bodies of patients, who had died during an attack of hemorrhage, and that he had the opportunity of examining, with reference to this very point in pathology, the surfaces of the bronchial tubes, of the stomach, of the intestines and of the uterus; that there never was the least apparent trace of any laceration or lesion of those membranes, although he took the precaution of carefully washing their entire surfaces, of allowing them to macerate in water, and at the same time of examining them with powerful lenses." But the most interesting case, more clearly demonstrating this doctrine, is recited by Dr. James Hamilton:—"A woman was afflicted with enlargement and complete prolapsus of the uterus. The inverted womb is described as having hung down between her thighs as large as a great bottle; it could not be replaced; it was tense and hard, except during the periods of menstruation, which took place regularly. At those times it became soft and flexible, and the menstrual discharge was seen by numbers of medical men and students to issue, *guttatim*, from the exposed surface." But it is said that menstruation is not a morbid process, and

or those cases are called *active* in which there is a local or general excitement, with apparent association of vital action above the natural standard; while those are called *passive* which are associated with apparent weakness of the system and of the parts involved in the difficulty.

Dr. Wood says other divisions have been made, such as “*constitutional*, in which the discharge was originally connected with the ordinary health of the individual, or has by habit become essential to that state; *vicarious*, in which a hemorrhage from one part has been superseded by another from an unconnected and perhaps distant part; *critical*, in which the hemorrhage occurs in the progress or at the close of any disease, marking and perhaps producing either a decided amelioration or a sudden aggravation of the symptoms; *periodical*, in which it occurs at different intervals; *arterial*, in which the blood proceeds from arteries; and *venous*, in which it proceeds from veins.” These are important practical distinctions, indicating in many instances appropriate and successful modes of treatment.

Constitutional hemorrhages may be said to be of two kinds; those that have become from long continuance necessary evacuations for the health of the individual, and that cannot be arrested without great risk of serious consequences, except by substituting the discharge by some other process. Such we occasionally find in the long continued drain from hemorrhoidal tumors and uterine hemorrhages. The other kind is that peculiar tendency, which exists in some families, to exhausting and sometimes fatal hemorrhages, occurring at a certain stage in the progress of uniting solutions of continuity. One notable instance of this kind occurred in my own practice, in which a slight wound, yielding at the time of the accident no more blood than usual, apparently healed up by the first intention, but afterward issued in a hemorrhage. The patient was a young man, about twenty years of age, who had made a slight incision in the ball of the hand. It was bound up and had healed, but from previous experience with similar accidents in his family, and once in his own person, he was very careful of the wound, and also of any

important to understand this peculiarity of constitution in the treatment of other affections, as well as of those cases generally styled *idiopathic* hemorrhages.

The *condition of the blood*, not only in its connection with hemorrhages, but also in its relation to other diseases, is a subject of the most profound importance to the profession and especially to their patients. I do not propose, however, to discuss the subject in this connection, as I have more fully considered it in its relation to inflammation, and have, from time to time, shadowed forth the most important points, having reference to its derangement in other affections. The doctrine of excess in the amount of blood as "one of the most fruitful sources of hemorrhages," I apprehend requires an important qualification to be successfully defended. It is akin to the doctrine that an excess of blood produces apoplexy, and seems to have been assumed from an imperfect apprehension of the whole facts in the two cases, being defended no doubt as the only convenient argument for the use of the lancet in either case. That the blood becomes abnormal from excess in some of its constituent principles, and thus favors the occurrence of hemorrhage, I have no doubt. But even in such cases hemorrhages are far more rarely observed than in instances of positive deficiency in the amount of blood. Thus uterine hemorrhages are far more frequently met with in persons of an exsanguineous condition than in those presenting an apparent excess, though it be in the disproportion of its component parts. So also epistaxis is far more frequent in anemic subjects, than in the opposite condition of the blood. But the influence of a deteriorated state of the blood is too apparent in many cases to admit of doubt. Though even here our knowledge is too limited and imperfect to admit of much certainty, and when we attempt to reason on it, we have no assurance that our theoretical conclusions will stand the test of future research and discoveries. Yet no facts in science are better determined than that any considerable deviation from the normal proportions of the combining, proximate principles of the blood must inevitably affect its circulation in the capillary tubes, even though the quantity or positive

ant pallor and faintness, the condition of the pulse, the physical symptoms afforded in such cases where effusion is liable to occur, such as fullness and fluctuation, and the symptoms developed by auscultation and percussion, where the difficulty exists in the pericardium or pleural cavity, will furnish grounds for tolerably safe conclusions.

In one or two instances when external hemorrhage takes place it becomes a matter of some difficulty to decide from whence it proceeds, as whether it comes from the throat or lungs, or from the bladder or kidneys. But the different diagnostic symptoms will be presented when the individual forms of hemorrhage are discussed.

The character of the effusion is very variable, depending not only upon the condition of the general circulating fluid, but also upon the organ from which it proceeds, and the matter or other fluids with which it may be accidentally mixed. Thus it is sometimes altered by an intimate mixture with the urine when it proceeds from the kidneys; it may be thrown from the stomach intimately blended with ingesta and secretions of that organ; and in passing from the bowels it may be mingled with their vitiated or natural contents, or be discharged in a pure coagulated or diffuent state. The state of the blood in the general circulation will influence its character as to coagulability and color. Blood rarely proceeds from the veins unless from ulceration of those vessels, or some other accidental rupture of their coats. Upon its dark or red, florid appearance has been based the error that it came from the veins or arteries. It never proceeds from either set of vessels, unless they are ruptured from the causes I have mentioned.

The indefinite terms irritation and inflammation, to which I have often heretofore objected, have given rise to inadequate explanations of hemorrhage. I have used these terms, and shall continue to use them in these lectures, as they are frequently understood; but the real condition of the parts to which they are applied is entirely different from that properly expressed by those terms. Thus, if you wound a capillary vessel, or thrust a small instrument through its coats, a

rush of blood takes place to that point from both directions notwithstanding the influence of the impetus given to the heart. This is called irritation that invites a flux of blood toward the point thus affected. But thrust the instrument merely into the coats of the small tubes, produce the same amount of violence but not so as to enter the cavity of the vessel, and the current of blood will go on uninterrupted as though nothing had happened. It will be seen, therefore, that irritation does not express the true state of fact.

In cases of what has been termed *active hemorrhage* local determination and a consequent fullness in the vessel generally takes place previous to the actual discharge. When hemorrhage is about to occur in the lungs, it not uncommonly happens that a sense of weight and oppression is felt previous to the appearance of the blood; yet a powerful flow of blood has begun, as much as after it has fully appeared. There is a forward and retrograde current, and the blood continues to accumulate until it bursts through the adjacent tissues. These phenomena are accompanied by a diversion from the whole circulating mass, proportioned to the extent of the local difficulty and the susceptibilities of the individual affected. This is most clearly manifest in the coolness of the extremities, and a sense of coldness or chills is experienced over the whole system. These symptoms generally continue until the local difficulty is checked, when they are followed by febrile reaction. The condition of the blood in this form of hemorrhage is said to be somewhat peculiar, and differs from that which exists in what is termed *passive hemorrhage*. In this the red corpuscles are said to be increased above the healthy or natural proportions, producing a large but soft and spongy clot. It is not a condition of the blood favorable to general hemorrhage; consequently it requires a local influence to develop it, and is generally confined to a part of the system or organ. It occurs generally in those full habits, but will always be found connected with a disproportion in the component parts of the blood, and a local disposition to produce it.

The condition of the system is very different in what

termed *passive* hemorrhage, and the condition of the blood varies equally with the local and general phenomena. It more frequently occurs during the progress of other disorders, such as malignant fevers, dysenteries, or other affections in which a low state of the vital forces is attended by relaxation and debility, and a greatly altered and vitiated condition of the blood. The capillary circulation corresponds with the state of the general system. It is easily arrested, and its movements are slow and imperfect, presenting often a purple appearance on the skin. The condition of the blood in these cases is by no means well understood. It is said to be deficient in fibrin, with an undiminished amount of red corpuscles and excess of serum, presents a dark appearance, and forms an imperfect clot, or the coagulum is deficient. These, so far as we are at present able to judge, may and no doubt do constitute its true condition; but it is a very remarkable circumstance that Magendie was able to produce at will, by the addition of a single medicinal agent, the precise condition of the blood here presented; the animal, on which the experiment was tried, dying with all the symptoms of malignant disease. It is quite certain, however, that, whatever the condition of the blood may be found to be in these affections, the difficulty is not confined to one organ, but may occur in different parts and tissues at the same time, and that the main disorder is in the blood itself.

. Either form of hemorrhage often constitutes a *critical* evacuation—portentous of good or evil results. In the more active forms it often affords relief to the local engorgement, and thus induces an effort of the system to a more vigorous action, which may go on to final recovery; while in the passive variety the discharge results in the removal of a portion of the noxious fluid, partly from the general system, but mainly from the local disorder connected with it, and in this way offers encouragement to the flagging powers of the vital forces, and with a simultaneous movement in the recuperative energies of the system, the patient recovers. But more generally the shock is too great, and the already waning and disheartened powers yield to the impetus thus added to the

ment, running, or loud speaking, may bring on an attack of hemoptysis. So also diminished atmospheric pressure, such as will be experienced on ascending a high mountain, and various other causes, may produce a similar hemorrhage; and so of other organs.

Intemperate habits either in eating or drinking, and want of appropriate exercise, may produce a condition of the blood favorable to attacks of hemorrhage. But the most commonly efficient cause is the influence of such habits combined with hereditary predisposition, and we most frequently meet with this difficulty in those who aggravate this predisposition by sedentary habits and improper indulgences. The hemorrhages of a more passive character have been sufficiently dwelt upon for a proper understanding of all that can be said with any show of science. I will only repeat that this form usually attends low grades of fever, dysenteries, petechia and scurvy, of all which the condition of the blood is now believed to be the essential cause.

Treatment. I propose at this time to indicate only the leading general principles by which you should be governed in the treatment of these morbid symptoms. They cannot be said to constitute positive disease, for, so far as I have considered them, they are merely symptoms of other diseases or morbid conditions. But whatever the difficulty may be, the first inquiry should be what has produced it? What cause, or combination of causes, has brought about the state of the system which we are called upon to change or remove? Is it merely one of nature's efforts, that may be trusted without interference? Or has nature rallied a disproportioned influence, which has gone too far and requires to be restrained? Thus, if from repletion and want of appropriate exercise some principles of the blood have accumulated in excess, and a fullness of the vessels of the head occurs, and if bleeding at the nose has taken place to an extent affecting the general system, measures should be immediately taken to stop it. But if it is merely a local plethora, without having continued so long as to affect the general circulation, the case may safely be allowed to continue until it ceases of its own accord. If

the extent of the evacuation and the general manifestations indicate an excess in some of the constituents of the blood pretty free refrigerant cathartic will be necessary. But should be attended by a profuse evacuation with great determination, diversion may be produced by ligatures to extremities or by mechanical pressure, until a coagulum formed, without the risk of the consequences often follow abstraction of the vital fluid. In such cases a free hydrag cathartic may be given. These measures, or some portion of them, often become necessary in rapid cases of hemoptysis, uterine hemorrhages, and would be more especially applicable in hemorrhages in the brain, though the latter cases present very little hope of relief.

Various local applications have been recommended, used for the purpose of diverting or repelling the blood from organs or parts affected with hemorrhages. Yet no very satisfactory effects will be derived when the hemorrhage proceeds from internal parts. Thus cold water or bladders of ice have been recommended, and in some cases no doubt *sectio* have a salutary effect. But since in other cases they have failed to produce even the least apparent good, there is ground to suppose that other influences might have offered the result that has been ascribed to that measure. The most reliable of the local remedies is a free application of cups to the part affected. Revulsive influences, such as hot fomentations, sinapisms, have a salutary effect in equalizing the circulation and in this way no doubt may afford some advantage in some cases.

Of the internal remedies used or recommended for hemorrhages, few can be prescribed with that scientific certainty which is always desirable. Astringents are naturally suggested in cases of flowing from relaxed tissues of the vessel, yet they are far from yielding the satisfactory results we would expect. Moreover, Magendie has shown that many of those substances abstractly supposed to be beneficial and which are often used, immediately prevent coagulation when directly mixed with the blood either out of the system or when circulating in the vessels,—a condition of all other

most favoring hemorrhagic discharges. But there are remedies possessing but little if any astringent properties, that have been observed to exercise a uniform, controlling influence upon these evacuations, and which may and should be administered. Such are the sanguinaria, trillium, spirits of turpentine, salt and ergot; but these specific applications will receive attention when I come to treat of the different kinds of hemorrhage.

Other remedies, acting more particularly upon the nervous system, such as opiates, hyoscyamus, and others, have, under certain circumstances, a powerfully controlling influence upon sanguineous effusions, partly by their sedative influence upon the system, and partly by equalizing the circulation. Medicines also, producing relaxation of the general system, have often been observed to exercise an unquestionable influence upon evacuations of the kind. Hence emetics have with some physicians held a high rank as curative remedies in such cases.

For the more passive hemorrhages, our remedies possess, if possible, a more strictly empirical character than those recommended for the active kind. This, in the present state of our knowledge of the intimate changes of the blood in disease, is not a matter of surprise, and therefore the best we can do, until the specific influence of medicines upon the blood is better understood in these affections, is to prescribe upon general principles. Thus, in cases of uterine hemorrhage associated with a low grade of fever, where ordinary astringents might be inadmissible, astringent injections and a general restorative course may be resorted to, such as a decoction of Peruvian bark and trillium, and a generous diet, or the use of ale or porter may be prescribed in such quantities as the system will bear, and repeated according to the circumstances of the case. If not connected with irritation of the stomach, I have seen decided relief from small doses of capsicum. If the hemorrhage is connected with scurvy, the use of the remedies recommended for that affection, together with the diet proper in such cases, should be prescribed.

When hemorrhage occurs as a substitute for other evacua-

red corpuscles, and offer a large and consistent coagulum, and if there be at the same time febrile action and considerable strength of pulse, it may be proper to have recourse to direct depletion, a restricted diet, and antiphlogistic regimen generally. If, on the contrary, as probably happens in the greater number of instances, the blood be deficient in coagulability, and of the character observed in the passive hemorrhages, a diet of animal food, aided by tonics and moderately stimulating drinks, as the malt liquors or wines, may become necessary. In the case recorded by Dr. Coates, the hemorrhage after having resisted a great variety of measures, yielded at last to generous food, stimulants, and the use of laudanum."

Those cases of hemorrhage which return at stated periods, but are not connected particularly with irregularity of the uterine functions, should be suspected at once of connection with malarial influences. And you will rarely be disappointed in this conclusion upon investigation. In such cases the free use of antiperiodics will generally afford the relief desired. And, in short, in the treatment of hemorrhages in general, the efficient cause of the difficulty, the influences that appear instrumental in its continuance, the condition of the system in general, and that of the organs involved in particular, the state of the blood as far as we are able to judge from the knowledge we possess on the subject, should all and severally be inquired into, and, so far as possible, corrections should be made, in all these particulars, to the full extent that may be compatible with the laws of health and the efforts the system is making to right the difficulties in which it is involved.

When it occurs frequently and without any apparent exciting cause, other than such as may be connected with the general system, careful inquiry will often find some derangement of action in the general functions, or some abnormal condition of the blood. But in scrofulous subjects it is not unusual to find an abraded or ulcerated condition of the Schneiderian membrane. In other instances no appreciable lesion can be discovered and none probably exists, but a morbid condition of the part will mostly be found, presenting a vascular and delicate appearance.

These cases are not any more dependent upon fullness of habit than other forms of disease; and in fact I have more frequently met with epistaxis in pale and delicate systems than in those of an opposite character. In either case, however, a sense of fullness is felt before the occurrence, which is generally relieved by the discharge. When the tendency to epistaxis is strong any trifling circumstances will often be sufficient to excite it. Thus, slight blows or injuries, active exercise or severe fatigue, hard and protracted study, great mental labor or sudden excitement, over-eating, sneezing or coughing, and in short anything calculated in the least to disturb the parts subject to the discharge may produce it; even stooping over, or wearing a tight collar or cravat, may induce an attack.

It occurs sometimes as a critical evacuation, and again appears to be vicarious and affords relief to symptoms of disease that might become serious. Such instances will be preceded by a sense of fullness about the head, sometimes amounting to positive pain; a sense of heat and weight will be felt, and in some cases a giddiness and confusion of thought, and loss of vision for a few minutes may occur.

Epistaxis frequently occurs during the progress of fevers, sometimes in those of a low grade, as well as in others of a more active and inflammatory character, and in some instances to an extent threatening the life of the patient. It is a symptom very commonly attendant upon anemia and scurvy, even in cases where the blood is so impoverished as scarcely to stain a white cloth.

every morning in cold water and followed with brisk friction, to secure a complete reaction and thus promote an equilibrium in the circulation of the capillary system. In addition to this I have also realized the most satisfactory results from showering the back of the head and neck every morning when first up, producing immediate reaction by friction. This course will rarely fail to break up habitual epistaxis in the cases I am considering. And it will be equally applicable in those cases of vicarious hemorrhages of the nose substituting in part or altogether the menstrual discharge; but in addition, such cases will require the use of those particular remedies calculated to restore this function. I have frequently prescribed with very good effects the emmenagogue pill heretofore recommended, with the use of warm diaphoretic teas, and bathing the feet in warm mustard water, or the use of a warm sitz bath, at about the period for the regular return of the monthly evacuation.

For the treatment of epistaxis when connected with fevers, purpura, scurvy and other diseases in which there is a similar condition of the blood, the general measures recommended for those several affections will be appropriate.

In every case of hemorrhage from the nose that has come under my observation, the blood has proceeded from that portion of the Schneiderian membrane which lines the nose proper, and can be arrested by external pressure upon the nose. This, in many instances, can be done by patients themselves, by grasping the nose with the thumb and fore finger, one on each side, as high up as the lower extremity of the bones, or as high as compression of the cavity can be made. This can be done if necessary, by an assistant. The compression should be firm enough to close the nasal passages, and to interrupt the flow of blood. In some cases it is necessary, in order to secure success, that the pressure should be made as high up as possible to admit the closing of the cavity. In order to arrest the discharge completely the pressure should be uniform and steady, and should be continued for some minutes, when it should be slowly relaxed so as to allow the parts to resume their natural condition gra-

this case. Ice also has been applied to the back of the neck for a similar purpose. Various astringent injections, such as the sugar of lead, alum, catechu, etc., or ice water thrown into the nostril with a syringe, have all been recommended, and probably have all been followed in some instances with relief, as many instances of spontaneous decline are no doubt familiar to every physician. In a severe and protracted case of this kind, I should have very little confidence in any of these articles, unless it were the cold water, as Magendie found most of them to prevent coagulation of the blood, while the contrary effect is the one from which benefit could be expected. A reliable remedy, no doubt, would be internal pressure by means of various expedients that have been and may be recommended. Among them may be mentioned a soft, dry sponge introduced either through the nostrils, or into the mouth and drawn up by means of a string previously passed through the nostril. This can be done by pressing the string up into the nostril in the form of a wad, when by a full and sudden inspiration exclusively through that nostril the string will be drawn in and carried below the soft palate, where it can be seized and drawn out through the mouth. The sponge being firmly attached to the cord can be drawn into the posterior nares. I have often seen boys go through this performance by way of sport, holding one end of the string from the nose and the other from the mouth. Among other expedients which have been proposed, I will suggest that a small bladder in a soft condition, having a quill attached to the small end, can be introduced through the nose into the posterior nares, and then being inflated a sufficient amount of pressure can be attained, by pulling upon the external extremity, to arrest the hemorrhage. It can be easily removed by allowing it to collapse.

Whatever method is employed to arrest the bleeding, either from the anterior or posterior nasal cavity, it will be well to bathe the feet in warm mustard water, and take other measures calculated to equalize the circulation.

tysis the blood is more florid and frothy, often mixed with mucus, and is preceded by a cough immediately before or upon its first appearance. It might, without proper care, be mistaken for that form of epistaxis proceeding from the posterior nares. But in this case it will generally be felt passing down into the throat, and its origin be thus determined.

Hemorrhage from the mouth sometimes accompanies scurvy, and in rare instances becomes so profuse as to be alarming. It is said, also, by Dr. Wood to be "frequently produced by inflammation and ulceration, as in the mercurial sore mouth." But I have most commonly found it following the extraction of the teeth, in two or three instances exhibiting the hemorrhagic diathesis in a striking manner, and being very difficult to control.

Treatment. When the blood proceeds from the throat, and in such quantities as to require attention, a gargle of a decoction of hydrastis and salt will be found a tolerably reliable remedy. The same may be applied by holding it in the mouth in cases where the bleeding is from other parts of the mouth or gums. But, if it can be applied to a bleeding surface, a fine powder of a species of *solidago* will give the most immediate relief. I have seen a number of cases where the hemorrhage was exceedingly profuse, so much so indeed as to justify the suspicion of a wounded vessel of considerable size, in which the bleeding was arrested in a very short time by filling the wound with the fine powder of the leaves of the *solidago rigida*. As a general thing I have derived very little if any benefit from the use of ordinary astringents in any form of hemorrhage, unless they also possessed some stimulating properties. But I have seen a profuse bleeding consequent upon an extracted tooth arrested by using the *solidago* powder. In the absence of this remedy, I have used very strong salt water with complete success, which may be applied by filling the cavity made by the extracted tooth with a saturated sponge; a small cork may be placed over it endwise and firmly held by closing the jaws. It may be necessary to support the under jaw by tying a folded handkerchief under the chin and over the top of the head. This should

These symptoms gradually increase until the accumulation becomes too great for the stomach longer to tolerate, and is rejected by vomiting, or passes down into the bowels and produces diarrhea, though the former is far the most common. In some cases, however, the only symptom that precedes the ejection from the stomach is a slight nausea, which may perhaps have continued only for a short time. After the vomiting has ceased patients often become easy, and but for the alarm consequent upon the discharge of blood would feel little more inconvenience than naturally attends the loss of blood. Frequently there is but the one discharge, and the patient immediately recovers, if it is an uncomplicated case, or if connected with other disorders the case may progress to a fatal or favorable termination without further manifestations of the kind. But not unfrequently there are repeated vomitings with no other alteration in the case than the slight relief afforded by the discharge, and the gradual exhaustion attendant upon the loss of blood, until the hemorrhage is arrested or the patient sinks from exhaustion.

Hematemesis is sometimes associated with affections of the liver and spleen, and will be manifest by the yellowness of the skin and eyes, with costiveness, tenderness and pain upon pressure in the region of the stomach. These cases generally mark the attack as one of great severity and far more danger, and will mostly manifest symptoms of depression corresponding to the gravity of the attack, such as a cold sweat, rapid pulse often nearly or quite imperceptible at the wrist, and finally partial insensibility, or coma if the case prove fatal. If the hemorrhage from the stomach is a mere symptom in the progress of low grades of febrile affections, the system will sensibly manifest the shock by symptoms of exhaustion, which may increase very rapidly and the patient sink from the depression; or reaction may gradually take place, and a favorable change in the aspect of the case date from the discharge. It may therefore be considered in any event a critical evacuation.

The *quantity of blood* evacuated varies greatly in different cases, from the smallest recognizable amount to half a gallon.

suddenly suppressed hemorrhoidal discharges which had previously existed for some time.

The vicarious discharges of blood from the stomach, and the occasional attacks that result from chronic disease of the stomach, are not generally dangerous, though they do occasionally prove suddenly fatal from loss of blood. But cases of hematemesis connected with low grades of fever may always be considered critical in their character.

Diagnosis. The sanguineous effusions for which hemorrhage from the stomach is liable to be mistaken, are hemoptysis, bleeding from the throat and nose, and discharge of blood from the bowels.

It will readily be distinguished from pulmonary hemorrhage by the darker appearance of the blood, and by being ejected by vomiting, while in hemoptysis the blood is thrown off by the act of coughing, and is more florid and frothy, and is never coagulated. Besides, the symptoms of pulmonary disorder will exist in the one case, and those of a gastric character in the other.

In hemorrhage from the nostrils and throat, its origin will generally be seen, or if not apparent, but little difficulty will exist in determining the source from the attendant circumstances. But where it has been unconsciously swallowed and afterward rejected by vomiting, you will have to rely on the absence of those symptoms peculiar to the stomach other than those produced simply by the accidental presence of the blood. When blood is discharged from the bowels, you will of course have to rely on the local symptoms and the attendant circumstances to determine whether it has its origin from the stomach or bowels. In the former case, the blood will be more intimately blended with other egesta, and less coagulated.

Causes. Various accidental causes, in no way connected with the general system, may be mentioned as occasionally producing hematemesis, such as violent straining during the administration of severe and irritating emetics, particularly tartar emetic, or from severe spontaneous vomiting, sometimes developed during the cold stage of intermittent and remittent fevers, and irritating substances taken into the stomach acci-

engorgement, either connected with derangement of the blood, or as a consequence of local determination produced by intemperance in eating or drinking, or other irritating substances taken into the stomach.

These facts are well established from the *post mortem* developments connected with the disease. In most cases, the only abnormal appearance that will be discovered is the usual engorgement attendant upon chronic affections of the stomach, which is sometimes confined to the mucous membrane, but in other cases appears in the submucous and cellular membrane. In disorganized states of the stomach, occasional instances of severed vessels will be found, though it by no means follows that the mode of its origin, in many cases of structural disease, is not by exhalation.

Treatment. In the treatment of hematemesis there are some apparent advantages not pertaining to other forms of hemorrhage. In this case, from the direct local application to the source of the blood and the general influence of hemostatic remedies on the system, we might reasonably expect more prompt relief than is realized in other cases. Yet the uncertain effect of most remedies used to arrest hemorrhages does not justify the expectation of much more success from medicine in this than in other forms of hemorrhage. Fortunately, however, hemorrhage from the stomach does not ordinarily show either very great violence or very persistent symptoms.

In all severe affections a great degree of quiet and usually the recumbent position are as necessary for the comfort of the patient as for the relief of the disease. In few other affections are these measures more important than in hemorrhages, not only for the purpose of keeping down undue arterial action, but also to allow coagula to form at the immediate origin of the blood, and thus block up the outlets for its discharge. In cases unconnected with other affections, and accompanied with much pain and gastric irritability, a large cup, or, what is more effectual, a large sized tumbler in which the air is exhausted with a light lock of burning cotton, may be applied immediately over the stomach, and it matters but

almost every other medicine and in fact everything else should be withheld.

But in cases presenting more evidences of an atonic condition of the stomach, few remedies will be found as effective in arresting the exhalation, and allaying the general disturbance of the system, as small portions of the acetate of morphine and cayenne pepper, given in doses of one eighth of a grain of the former and one grain of the latter every hour until relief is obtained. At the same time a decoction of *prunus virginiana* (wild cherry) bark may be given in two tablespoonful doses every hour.

When the attack appears to have been superinduced by morbid action in the liver or spleen, and evidences of obstruction in the portal circulation exist, and when inactivity in the biliary function is evinced by a sallow skin and yellow eyes, in addition to such of the other measures as the urgency of the symptoms seems to demand, a pill composed of taraxacum and podophyllin may be given night and morning, or one at night only if it is found to act sufficiently upon the bowels, and should be continued until the indication is fulfilled.

Hemorrhage from the stomach apparently connected with or resulting from irregularity or suppression of any natural or habitual evacuation, should be treated with the measures already mentioned, or such of them as may be demanded. And in addition immediate resort should be had to such medicines or other measures as are best calculated to restore those evacuations, or substitute such other depurating discharges as may appear most nearly allied to them or may be most effective for this purpose. If the monthly terms are deranged, emmenagogues should be given with other measures adapted to restore this secretion. If hemorrhoidal discharges that have existed for a long time have been arrested, free purgatives and cupping the lower portion of the spine should be resorted to. Or if the attack has resulted from translated eruptions or rheumatic affections, resort should be had to counter-irritation, cupping the spine, hydragogue cathartics, and other remedies calculated to remove from the system the peculiar sources of disturbance in the original disease.

LECTURE LXX.

HEMOPTYSIS—HEMORRHAGE FROM THE LUNGS.

*General remarks — Predisposing circumstances — No age exempt—
General and diagnostic symptoms — Causes — Prognosis — Post
mortem — Treatment.*

The conventional meaning of the term *hemoptysis* is entirely different from its original signification. The former restricts it to the discharge of blood from the pulmonary air tubes, while the latter strictly applies it to the evacuation of blood from the mouth, whether it proceeds from the throat, stomach, or lungs—literally, *spitting blood*.

A highly vascular surface, as extensive as the bronchial mucous membrane, and subject to such various obstructing influences, could scarcely be expected to escape the frequent sanguineous eruptions common to most mucous tissues. The peculiar liability of the pulmonary organs to capillary congestion, and their frequent exposure to irritating influences producing that result, such as vitiated air and mephitic gasses, or undue exercise of the lungs, render hemoptysis in those parts of more frequent occurrence than in most other parts of the human system. Subject as the bronchial mucous surfaces are to causes producing no small obstruction in the circulating vessels, we are certainly justified in concluding that hemoptysis does not occur as frequently as might be supposed, and therefore that engorgement of the bronchial vessels often exists without producing sanguineous exhalation. Yet it is by no means certain that extravasation does not exist to some extent, though it is not shown in the expectoration. But where ~~effusion~~ has taken place to any great amount, it will rarely

it will be coagulated, and when collected in considerable quantities the upper surface will present a frothy appearance. But when only a small amount at a time is discharged, it will not present so bright or scarlet an appearance, and will generally be mixed, partly in a fluid and partly in a coagulated state. When, however, the active form of the attack has subsided, and the discharge is effected by considerable cough, the whole amount will present a dark and clotted appearance. But when it is mixed or blended with the mucous secretion, it is more fluid and not so dark. This character of hemoptysis indicates that the blood comes from the minute bronchial vessels or air cells of the lungs. In some instances the whole discharge occurs in a very short time, while in others it continues for hours somewhat freely, and then a bloody expectoration may follow for a number of days. Sometimes a slight bloody expectoration occurs every day for a long period without amounting to any considerable quantity in all.

Hemoptysis itself is not generally an alarming occurrence, as it not unfrequently affords relief to an existing engorgement of the pulmonary organs productive of embarrassment and distress. But when it is portentous of more serious pulmonary disorder, or is indicative of a predisposition to disease of the lungs, it is to be looked upon with fear.

Hemoptysis, as generally understood, is not confined to any particular portion of the pulmonary apparatus, but may occur either from the larynx, trachea, bronchial tubes, or proper air-cells of the lungs. It however very rarely occurs from the larynx in any amount worthy of much notice. In chronic laryngeal affections, involving the cellular structure from ulceration, it is not uncommon to see slight streaks of blood in the matter thrown off. The origin of the blood in these cases will be readily determined from the general symptoms of the local affection, as well as from a stinging or tickling sensation experienced in the larynx. But as such cases tend to involve the lungs in serious disease, if not early relieved, it may be inferred where this event does follow, that the primary source was in the deep-seated portion of the lungs.

the exhalation is confined to the smaller bronchial tubes and minute air cells of the lungs, from the fact that every symptom of the supposed obstruction exists without any expectoration; whereas if the blood were exhaled into the larger bronchial tubes it would be thrown off.

Instances do occur, however, when no doubt can exist that the ulcerative process has destroyed the coats of the arteries, and then large quantities of blood are passed, through the openings thus made, into the bronchial tubes and discharged. When this does occur, if the disorganized vessel is of considerable size, the patient sinks from the profuse loss of blood in a short time.

When the origin of the blood is from the mucous membrane of the pulmonary air tubes, it rarely becomes profuse, but is shown in the mingling of the exhaled blood with the mucous secretion, presenting an appearance not very unlike the expectoration in common cases of pulmonitis. But we have every reason to suppose that the cases of hepatization, occasionally found, involve the air cells, and are nothing more than a sanguineous exhalation not discharged, but blocking up the small bronchial tubes and air cells of the lungs. The substance of the lungs in these cases presents a dark mahogany color, of a consistent and granulated texture. It is no uncommon occurrence to find circumscribed portions or lobules of the lungs hepatized, while the surrounding portions present a healthy appearance. In such cases the exhaled blood is not confined to the air tubes of the lungs, but the pressure from the accumulation and distention of those tubes, ruptures the air cells, during the percolation, and the blood becomes diffused into the inter-lobular cellular substance of the lungs, thus obstructing the expansion of the part as perfectly as though it were composed of a solid substance. In cases connected with a low grade of fever, in which the blood is in a partially decomposed condition, and only forms different clots, the part thus involved exhibits a soft or pulpy state, and when cut, blood flows somewhat as from a wounded vessel.

The distinction between these cases of pulmonary apoplexy and the ordinary congestion will be readily recognized by the

lungs are various. Blows or injuries to the chest are frequently observed to produce it. Undue exercise of the lungs in singing, speaking or playing on wind instruments, or severe exertion—such as tusseling, running, or ascending flights of stairs or other heights, are perhaps among the most common exciting causes. A greatly diminished density of atmospheric pressure, such as is experienced on high mountains, or in balloon ascensions, will produce hemorrhage from the lungs. I have myself known a number of instances where individuals, having a predisposition to pulmonary disease, were attacked with hemorrhage from the lungs shortly after ascending a mountain. The inhalation of irritating substances, such as gasses, comminuted powders, heated or unusually cold air, etc., may be mentioned as frequent causes of hemoptysis. Suppression of habitual evacuations, whether natural or accidental, compression of the chest by tight lacing, and the sudden transfer of irritation from other parts of the system, as rheumatism and eruptive diseases, are among the exciting causes. Effusion of blood more or less free is almost a universal attendant upon inflammation of the lungs or bronchial mucous membrane, though for the most part the amount of blood thus discharged is inconsiderable, and is mixed with the mucous secretion. In some cases of pneumonia fresh blood is thus thrown up. Hemorrhage from the lungs is a quite common occurrence both in the beginning and frequently during the progress of consumption. When it occurs as the earliest indication of an encroaching pulmonary disease, it will usually, for the time being, afford relief to any symptoms of irritation that may have previously existed, and is therefore calculated to encourage those who are ignorant of the import of such attacks. But for the most part the hopes thus excited are doomed to bitter disappointment, as it is generally the first decisive step in the progress of this fatal scourge.

Hemoptysis may occur independently of any tuberculous affection, from a strong hereditary or other tendency in the organization of the lungs, and from any of those occasional, exciting causes producing an attack of the kind, and finally

indicative of vicarious action should be regarded more favorably; as the habitual discharge, for which this effusion has occurred as a substitute, may generally be restored by an appropriate course, and the patient finally recover. These vicarious attacks will generally be satisfactorily determined by their regular occurrence at the usual periods of customary evacuations, such as the menstrual secretion, and habitual hemorrhoidal evacuations.

Hemorrhage from the lungs sometimes takes place with other affections. It is said, for instance, that many persons affected with organic disease of the heart are liable to attacks of hemoptysis. These cases result in part no doubt from the pulmonary obstruction produced by the mechanical pressure of the enlarged organ upon the pulmonary vessels, but mainly from the increased action in the pulmonary circulation necessarily produced by the excessive action of the heart; or, on the other hand, the impediment to the pulmonary circulation caused by the weakened action of the heart, in certain forms of cardiac affections, may produce engorgement in the lungs favorable to hemorrhage. It may also result from a bursting of aneurismal tumors in the large blood vessels, and thus by the pressure drown the lungs, or find its way into the bronchial tubes.

Post mortem investigations have generally failed to discover any positive disorganization of the mucous surfaces of the pulmonary tubes even in cases terminating fatally from loss of blood. But a moderate degree of redness is seen, though not usually sufficient to constitute positive inflammation. It is therefore clearly determined that the discharge takes place by a kind of exhalation. While these are the general facts, other appearances connected with wounds and local injuries would necessarily be found, and there are cases no doubt where the rupture of important vessels has taken place from some of the causes already mentioned.

Treatment. In the treatment of hemoptysis one of the first points to be observed is the cause of the attack. This, however, in most cases does not stand out so conspicuously as in many other affections, in which, when the cause is removed,

In more severe cases, if the patient is restless and uneasy, in addition to the measures just mentioned, a powder composed of two grains of capsicum and half a grain each of opium and ipecacuanha may be given every two hours, until the patient is relieved, or until the medicine has produced a decided impression on the system. At the same time a strong decoction—say an ounce each to a quart of water—of *trillium pendulum* and *macrotys racemosa*, should be given in ounce doses every hour, and I may here remark is, in most forms of hemorrhage, especially pulmonary and uterine, the most reliable internal remedy I have ever used. It should be continued until the disorder is entirely arrested. A strong decoction of *lycopus virginicus* should also be given in ounce doses every hour and a half. If the symptoms show any evidences of considerable congestion in the lungs, a number of large cups should be applied to the side affected, with scarification if the case is urgent.

In cases of still more profuse and rapid hemorrhage, for the purpose of diverting from the lungs and suspending, for the time being, a large amount from the general mass of circulation, the application of ligatures to the limbs near the body—to one or all of them, as the urgency may demand—will afford relief not offered by any other means, without doing violence to the healthy proportions of the blood, or laying the foundation for other difficulties not easily removed. They should be applied tight enough to mainly interrupt the venous circulation, being careful not to arrest or impede the arterial action, and may be continued till the hemorrhage is checked, and then should be removed gradually. I have witnessed immediate benefit in these rapid cases, followed by final recovery.

In cases connected with fullness of habit and more than usual arterial action, simultaneously with the other measures, or such of them as may be thought necessary, a speedy and free hydragogue cathartic should be given. The antibilious physic and cream of tartar will answer this purpose, or, if otherwise more desirable, a seidlitz powder may be given every two hours, until a free operation is produced. If associated

Be that as it will, you may perceive that this blood is very slightly viscons; I in consequence presume that further mischief will occur. We shall see if my presumptions are realized." The case was subsequently presented, and singularly verified the learned lecturer's prediction. Magendie was then illustrating, by experiments, that a certain amount of visconsness was necessary to the free and healthy circulation of the blood in the capillary tubes, and without it that the blood became obstructed in those vessels, and, under circumstances otherwise favorable, hemorrhage would occur. This visconsness he demonstrated was affected by bleeding, and thereby conduced in a remarkable degree to the production of hemorrhage.

I have not recommended astringents as such for two reasons. First, they have failed in my experience to answer the expectations which their sensible properties seemingly justified, and have not had any thing like as good an effect, when administered in this and kindred affections, as other remedies which I have used and recommended. And secondly, the experiments made by Magendie upon the blood with many remedies of this class, both when injected into the blood of the living animal, and also when mixed with blood out of its circulating vessels, have shown most conclusively that its effect is to prevent the formation of a coagulum, a circumstance well known in all cases to be most favorable to hemorrhages of every description, the blood without coagulability having no security in the tubes in which it naturally circulates. Thus, what experience and observation have most satisfactorily shown to be correct, direct experiment upon the blood, with analogy and just implication, most clearly confirms. It is not, therefore, to the class of remedies possessing merely astringent properties, or having the effect solely of constringing the animal tissues, that we are to look for our most reliable agents in the treatment of this class of diseases. We must rather expect to find satisfactory therapeutic agents in those articles which have a more specific vital influence on certain morbid actions or conditions of the animal organism. In the present state of our knowledge it may be difficult to

other local measures, or to change the condition of the general system upon which the hemorrhoidal affection depends. So, in short, of other states of the system in which other affections have been transferred to the lungs and have produced hemoptysis, the appropriate measures for their complete eradication, or local and general measures to divert the transferred irritation, should be resorted to.

In order to prevent recurrences of hemorrhage from the lungs all the general causes—among which the organization of the lungs and the condition of the general system hold the most conspicuous position—should be as far obviated and changed as the knowledge we possess of the best means will enable us to do so; while at the same time the influences known to be favorable to occurrences of the kind, and especially such as are found to be instrumental in producing the present attack, should be particularly guarded against. Singing and speaking are liable to induce hemoptysis, and therefore should always be proscribed, particularly when they have already produced an attack. Exposures of every kind should be carefully abstained from, moderate exercise in the open air should be taken to the extent of the patient's ability—uniformity of temperature in the system should be secured by appropriate clothing, and the surface frequently bathed to promote an equilibrium in the capillary circulation. The digestive organs should be attended to and always kept in a healthy condition, either by using aperients, tonics, and alteratives, if necessary, or by abstinence from medicine, as the case may seem to demand.

LECTURE LXXI.

HEMORRHAGES—CONTINUED.

Menorrhagia—*Definition*—*Active and passive forms*—*Symptoms of active menorrhagia*—*Symptoms of passive form*—*Treatment*. *Intestinal hemorrhage*—*Rarely occurs*—*May originate in stomach*—*May attend fevers*—*Causes of evacuations various*—*Anatomical developments*—*Diagnosis*—*Treatment*. *Hematuria*—*Symptoms*—*Diagnosis*—*Causes*—*Pathology*—*Treatment*.

MENORRHAGIA, OR UTERINE HEMORRHAGE.

In treating of this affection, I shall not confine my view implied by the literal meaning of the term, nor follow precisely the course adopted by most popular writers who have written on this subject; but shall comprehend only those forms of uterine hemorrhage which occur about the time of the regular menstrual discharge, but those cases which are produced and kept up by local disease usually found about the neck of the womb. I take this course justified by the fact that I have met with numerous cases entirely unconnected with surgical practice, and likewise associated with obstetrical experience. I shall nevertheless, comprehend in this lecture those uterine hemorrhages often occurring in connection with pregnancy, or following child-birth.

With the explanation of hemorrhage now generally admitted, and with the present understanding of the menstruation, the regular uterine discharge, which, as a general rule, occurs once a month or twelve times a year, from about

age of fifteen to forty-five, cannot with propriety be considered as uterine hemorrhage. Yet most of the cases met with by the practitioner present few, if any, evidences sufficient to distinguish them from the natural evacuation, except their greater frequency of recurrence and somewhat more profuse discharge. In a practical point of view, therefore, these irregular periodical evacuations, and others having the character of a hemorrhage, must be considered the same, since the two morbid processes do not differ in their influence upon the health of the individual, and require similar measures for restoration. No precise distinction between the unnatural morbid process and the natural one, can ordinarily be arrived at, without a more critical investigation than can usually be made. Nor can any particular limit of the amount evacuated be adopted as the standard of a natural flow. For, although an evacuation varying from two to six ounces of an uncoagulable fluid, recurring twelve or thirteen times a year, may be considered an ordinary healthy discharge, yet we know there are many instances where the discharges vary both in amount, from one half to three times as much, and in frequency, from three to six weeks, without developing any symptoms of disease, and without any interruption to good health. The only distinction, therefore, that can be made in these cases, with any practical benefit, will depend upon the effect produced upon the health of the individual.

Hemorrhage from the uterus is divided by authors into the two forms of *active* and *passive*. Usually in the *active form*, for a few days before the appearance of the expected menstruation, a sense of fullness and a throbbing sensation will be experienced about the pelvis, sometimes accompanied by a sense of internal heat, while the external organs will be somewhat enlarged. In some cases there is soreness or tenderness in the mammary glands; the bowels become costive, the tongue furred, the pulse exhibits a slight increase in frequency, while there is slight heat of skin, with some thirst and headache. These symptoms continue for a few days, when they are partially relieved by the appearance of the monthly evacuation, which comes on violently and is greatly increased in

acter, and located about the mouth or neck of the uterus. I have met with a number of instances of this kind, and, upon careful vaginal examination, ulcers more or less extensive have been found in the mouth of the womb, from which the sanguineous exhalation was constantly taking place, mingled with the natural evacuations at the regular periods, but continuing after that discharge ceased. These ulcers have been found to vary in different cases; in some a row of small ulcers was observed occupying the greater portion of the mouth of the uterus; in others they were less in number, but larger and more irritable; while in two or three cases ulcers of the size of a walnut projected beyond the neck of the uterus, presenting an irregular and fungous appearance.

In most of these cases, whether recurring at the regular periods or at shorter and irregular intervals, and more especially where a constant drain upon the vital fluid is kept up, sooner or later the system begins to manifest the loss it is sustaining by general appearances of exhaustion and decline. A very sallow complexion, with pale lips, and a general anemic appearance of the capillary circulation; an irritable and feeble pulse; a hurried and exhausted respiration upon any exertion; frequently a bloated and edematous state of the extremities, and often serous effusions into the cavities; irritability of the bowels, and a weakened state of the digestive organs, are attendant upon the case, and indicate a doubtful issue unless speedily arrested.

Uterine hemorrhages of the character I am considering rarely, of themselves, prove fatal, and even in any ordinary complication can readily be relieved when timely and appropriately managed. But in what has been termed the *passive* form, a more exhausted and deranged condition of the general system, and particularly a deteriorated state of the blood, will be observed from the beginning of the case. Thus when scurvy, purpura, or other forms of disease in which a vitiated condition of the blood is a prominent symptom, producing a corresponding derangement in the more solid tissues of the body, are found to exist, the system will be in a condition favorable to the production of passive hemorrhage upon very

produce a local determination to the pelvic viscera, and thereby favor the occurrence of excessive flow, or actual uterine hemorrhage. Costiveness and tight lacing may be said to produce similar effects by mechanical obstruction to the ascending circulation. Among the immediately exciting causes, I have observed that long continued standing in the labor of ironing, especially when the system becomes overheated, is the most common.

Treatment. In no form of hemorrhage is entire and absolute quiet so necessary as in this. Whether it be for the purpose of preventing abortion or miscarriages, or of allowing the percolating fluid to be dammed up by coagula, in the hemorrhagic form of the affection, or of preventing any undue obstruction to the returning current of the general circulation and thus guarding the uterine vessels from engorgement, rest in the recumbent posture is always to be directed for attacks of flooding or excessive menstrual discharges. In addition to this, a large sinapism should be applied to the spine between the hips, and allowed to remain until effectual counter-irritation is produced. Meantime, if the hemorrhage is associated with pain, and a sense of weight and bearing down, a powder of acetate of morphine and capsicum, in doses of one eighth of a grain of the former and two grains of the latter, should be given every hour and a half, until the pain and pressure are relieved. Whether this prescription can be said to have any specific effect upon the uterine vessels, by restraining the exhalation of blood, or whether it exerts a diffusible antispasmodic influence upon the local spasm and the general circulation, its beneficial effects in this form of hemorrhage, in the condition I have alluded to, will rarely fail to be made apparent, not only in relieving the pain and quieting the nervous system, but also in checking the rapid flowing which often attends such cases, and especially in producing a warmth in the extremities, and a healthy glow over the whole system, that did not previously exist.

The measures just mentioned are more particularly calculated to affect the general circulation. At the same time that they are administered, others, believed to have a more direct

influence in the cure of disease. A medicine may be found curative beyond a doubt, and our general views of its properties may be made apparently to harmonize with its action, for the time being; while subsequent observations may prove that properties were ascribed to it which, in fact, it did not possess. Yet our confidence in it should not be abated, if it has really produced beneficial effects. In regard to the above prescription, the therapeutic action of the sanguinaria upon the circulation, in quieting excessive, or diminishing natural arterial action, is well known and clearly understood; and the effect of the macrotys, in exciting the uterine fibers to tonic contraction, is equally well ascertained, and its operation sufficiently intelligible. But as for the trillium we are compelled, at present, to place it in the category of empirical agents, though certainly a valuable remedy in hemorrhagic affections. In cases of uterine hemorrhage, connected with great relaxation of the uterine fibers, ergot can be recommended with considerable confidence, as offering advantages superior to most other remedies; it may be given in decoction.

When the bowels are found loaded, and especially if the patient is plethoric, a free operation from a cathartic should be procured, unless contra-indicated by appearances of general debility. But cases sometimes occur in which, either from delay in sending for a physician, or from the inherent tendency in some persons to rapid evacuation, the danger to the patient, on account of the amount of blood already lost, or the rapidity with which it is flowing away, is too great to await the tardy operation of any medicine, however speedily it may act through the general system, before applying effectual means to check any further discharge. This can readily be accomplished by firmly plugging up the vaginal outlet with a sponge, if at hand, and if not, with a wad of folded linen dipped in cold water. The subsequent discharges being thus retained, a clot will be likely to form, and in this way close up the orifices through which the exudation occurs. This should not be allowed to remain more than twenty-four hours as it will become offensive, and is liable, in that case, to produce nausea and vomiting, and thus start the discharge

culty is found to consist in small aphthous ulcers about the mouth of the uterus, or any where else, they can generally be readily healed by a few slight touches with the nitrate of silver every three or four days, injecting, meantime, a decoction of hydrastis every day. If the disease appears to be located higher up in the cavity of the womb, a solution of one drachm of the sesqui-carbonate of potash in two ounces of water may be injected into the cavity, by means of a small syringe, fitted to the end of a straightened silver male catheter, which should be passed through the speculum into the mouth of the uterus. I have also used for a similar purpose the diluted tincture of iodine.

But if a fungous excrescence is found to exist, a more efficient application than either of the foregoing will be necessary. In such case I have always succeeded in a short time by applying oak caustic through the speculum immediately to the fungous growth. Great care should be used, however, to confine it entirely to the fungus, as otherwise you are liable to produce an eschar in the vaginal lining. The patient should be placed in a bright light, so that the neck of the uterus shall be brought into the focus of the speculum, and then the end of the catheter, moistened with a small portion of the caustic, should be applied directly to the ulcer. The application, when thus made, should be repeated only once a week, giving time for the eschar of the first to come away before another is made, until the fungus is destroyed; when it should be allowed to heal, and may be assisted in so doing, if the process is tardy, by one or two slight touches with the nitrate of silver. I have uniformly found the flowing to cease upon the first application, and afterward return at the regular period in appropriate quantities. This course, with moderate tonics and other general restorative measures, will generally be sufficient.

I have, gentlemen, thus endeavored to instruct you in all that practically pertains to uterine hemorrhages as they are likely to present themselves in the ordinary experience of the practitioner, leaving out of view those cases connected with

culty, and though in fact it rarely occurs in this connection. Nor are the feelings of uneasiness and oppression, the sense of fullness or tenderness upon pressure in the bowels, the pains extending into the sides, the well-marked symptoms of indigestion, loss of appetite, furred tongue, and irregularity of the bowels mostly in the form of diarrhea, accompanied by a pale or sallow complexion, the sense of weakness and exhaustion, usually attendant upon chronic affections of the bowels, any more reliable, though they generally precede an attack of the kind. These symptoms, however, may exist for a long time in chronic enteric affections, and finally disappear; or they may be followed by a sensible increase of the local uneasiness, with griping pains, an increased frequency of the pulse, a sense of exhaustion, coldness of the extremities, slight nausea with faintness, and dyspnea followed by a copious discharge of blood. The blood, upon examination, may present a dark, grumous, and partially clotted appearance, or it may be nearly black with diffuent clots partially mixed with fecal matter. Or the hemorrhage may appear without any prominent symptoms of previous disease, and not be suspected until its appearance and the attendant exhaustion define the case. The sudden occurrence of symptoms of debility, faintness, and exhaustion, with existing evidences of protracted hepatic disorder, accompanied by a sallow, bloated, and greatly debilitated condition of the system, would justify us in anticipating the discharge.

The amount of these evacuations varies in different cases: in some being insufficient to produce any sensible impression upon the strength of the patient, while in others the quantity is so great as to bring on an alarming prostration, and occasionally a fatal exhaustion. As a general thing, however, the system rallies from the depression consequent upon the loss of blood, reaction occurs, and the patient is finally restored. After a short time, and while the patient is apparently doing well, another discharge may come on, and prostrate the system lower than before. It may, in the less severe cases, recur a number of times, and thus gradually weaken the powers of life, until the anemic condition of the blood and a dropsical

said of those cases occurring in connection with chronic diseases of the bowels. But in other cases the mucous membrane will exhibit no evidences of disorganization, and will present no other abnormal appearances than a congested state of portions of its circulating vessels, and perhaps some traces of the coloring matter of the blood ; or possibly the main constituents of the blood itself will stain the mucous surface, resulting, probably, from the imperfect effort at absorption ; thus showing that the rupture of a vessel, either from existing ulceration, or from accidental causes, does not explain the sudden appearance of blood from the bowels, as is clearly shown by post mortem investigation.

Diagnosis. I have already sufficiently discussed the distinctive characteristics of the affections which are in any way liable to be mistaken for hemorrhage from the bowels, and I refer you to those subjects if any farther explanation is required for a full understanding of this branch of the subject. I may add, however, that in some rare instances there is a thick, tawny, inspissated secretion, probably proceeding partly from the liver, and partly from the bowels, which, in some respects, resembles the discharges of blood from greatly vitiated and broken down systems, in which the blood exhibits but little of its true vital character. If, in such cases, there is obscurity and doubt about its character, the addition of a little salt will change it to a more florid color if it is blood ; whereas, if it is a mere morbid secretion, the addition of the salt will produce no such alteration. The blood discharged from hemorrhoidal tumors resembles so closely that which escapes from the bowels farther up, as to render the local symptoms the main criterion to rely upon in this case.

Causes. The fact that hemorrhage from the bowels is almost inseparable from other diseases, and that it is merely a symptom in the progress of those affections, renders an enumeration of the causes, which may be instrumental in producing it, both difficult and unnecessary. I may say, however, in general terms, that whatever tends to produce obstruction, and consequent engorgement in the capillary circulation of the mucous membrane of the bowels, may, and

given three times a day ; at the same time, a large irritating plaster should be applied to the abdomen, and worn till an extensive discharge is established from the pustulating sore produced by it.

Most cases will be accompanied by a frequent tendency to evacuation of the bowels, which should be kept moderately in check by the daily use of some astringent and anodyne preparation, such as the tincture of catechu and paregoric, given in drachm doses each, and repeated as often as may be necessary ; or it may be sufficient to administer an injection of laudanum. Or if there is a mere relaxation, without much diarrhea—but a looseness bordering on it—a decoction of the blackberry root well sweetened, with an addition of a small portion of brandy, unless the case is accompanied by arterial excitement, may be taken in wineglassful doses three or four times a day.

Those cases dependent upon unequivocal derangement of the blood, such as occurs in scurvy, purpura and low fevers, should be put upon a course of medicine and diet best calculated to restore a healthy condition to the fluid. A general course of tonics, alteratives, and nutritious diet, comprehends the outlines for such cases ; the details have already been given when considering those several affections.

When you have reason to suppose that an impacted or loaded condition of the colon has been instrumental in producing the hemorrhage, a brisk cathartic should be administered in the beginning. The antibilious physic and cream of tartar is perhaps as prompt and efficient as any that can be given, and also sufficiently mild ; or a dose of turpentine and castor oil may be given ; or if a less active medicine will answer, a seidlitz powder may be used, and repeated every two hours until it operates. If the case is in any way connected with irregularity in the menstrual evacuation, while the measures already mentioned, or such of them as may be indicated, should be used to palliate the urgent symptoms, the most effectual means to regulate that discharge should be resorted to, at as early a period as may be compatible with the peculiarities of the case. When the hemorrhage is connected

one simple fluid having the appearance of bloody water, and some pain and uneasiness will be felt in the region of the kidneys, with some tenderness upon pressure at those points. While if it proceeds from the ureters, though the blood might, in some cases, be quite intimately mingled with the urine, in others it would present the appearance of long and cylindrical clots, formed in the ureters and thence passed into the bladder; while the pain would be referable to the region of the ureters, and would be such as is experienced in the passage of small urinary calculi formed in the kidney and finding their way into the bladder. Where its origin is from the bladder, the pain experienced either before, during, or after the evacuation, will be felt in the region of the bladder immediately above the pubis, or in the perineum and extending into the glans penis; and the blood will present a comparatively separate and distinct appearance of coagula floating in the urine. In some cases the clot forms in the bladder, so as partially or entirely to prevent the discharge of urine. When it proceeds from the urethra, it comes away unmingled with urine, as it is exuded, drop by drop, or in a stream. In the latter case, the urine when discharged will not present the bloody appearance common to the other cases, except that the first portion evacuated will be slightly colored as it washes off the exuded blood in passing through the urethra.

The quantity of blood discharged in this form of hemorrhage is found, as in other instances, to vary greatly in different cases. In some, it is barely sufficient to color the urine or stain a cloth; while in others it flows in quantities sufficient to greatly exhaust the system and endanger the life of the patient. In some cases it comes away presenting a bright and florid color, and in others a dark, brownish red appearance. Sometimes it flows away readily without pain or much uneasiness; then again it is discharged with difficulty, producing, both before and afterward, severe suffering and distress, accompanied with frequent inclination to urinate, a bearing down sensation and pain in the neck of the bladder, and a feeling of heaviness and fullness in the pubic region.

Hematuræ is, generally, neither very painful nor dangerous,

upon cooling will again become fluid. This point, however, can be settled beyond question by microscopic examination. The urine discharged by females, during the menstrual period, might readily be mistaken for bloody urine, and, without careful investigation, one could be easily misled, if deception was intended; but, in such cases, the usual inquiries will determine the question beyond any doubt.

Causes. One of the most common causes of bloody urine is the use of large doses of spirits of turpentine. An over dose, however, is not always required, as I have known hematuræ to follow the administration of that medicine in small doses, and Dr. Wood mentions an instance of bloody urine from the inhalation of the vapor of turpentine. Some individuals show a peculiar susceptibility to the action of this medicine on the urinary organs. From the well known peculiar effects of cantharides upon the neck of the bladder, that article might be expected to exert a particular tendency to hematuræ, and may, therefore, be mentioned as one of the causes of that disease.

Hematuræ is a common symptom in certain calculous affections, simply from the mechanical effects of the calculi on the bladder. But any other causes operating mechanically upon the different organs and parts of the urinary apparatus may produce the affection. It is in this way often produced by falls, blows and other injuries. It is said, also, to be produced by a sudden suppression of the menstrual secretion, and an arrest of long continued hemorrhoidal discharges. It may, likewise, result from any slight causes that tend to produce a local determination, where, either from hereditary predisposition, or accidental tendency, a condition of those organs favorable to the disease exists. Thus, where there is any considerable hereditary tendency to urinary hemorrhage, exposure to cold would be liable to produce capillary obstruction in the parts thus constituted, and bloody urine would be likely to follow.

The *pathology* of hematuræ presents nothing differing specially from the general class of hemorrhages. Like other forms, it most frequently results from local engorgement,

affections of the urinary organs, and, therefore perhaps fewer remedial agents are generally prescribed for these than for most other disorders. The peach leaf decoction will be found a very valuable remedy in those cases of hematuria attendant upon the low forms of disease heretofore referred to. In such cases, a mild and unirritating tonic is indicated, and the peach decoction will answer the purpose in this respect, as well as fulfill the indication furnished by the hemorrhage. It may be given in wineglassful doses every three hours, or oftener if desirable. Cases in any way connected with, or produced by, periodical or habitual evacuations, should be treated upon the general principles heretofore directed for such complications. Thus, if hematuria is found to result from a suppression of the menstrual secretion, while the urgent symptoms are palliated by the various measures directed for cases produced by other causes, or by such of them as the symptoms may indicate, more radical and permanent remedies, calculated to restore the disturbed uterine function, should be administered. So also with other diseases for which hematuria is substituted, the measures best calculated to bring about a restoration in those functions found disturbed, should be instituted.

Notwithstanding the more active symptoms of this disease are occasionally produced by spirits of turpentine, the more passive form of the affection will often be benefited by the internal use of the same medicine in appropriate doses. Fifteen or twenty drops may be given at a dose, and repeated for a time every two hours. The bowels in all cases should be kept moderately free, either by appropriate diet, or by injections, if they can be made to answer the purpose, and, if not, by mild aperients. The antidyspeptic pill will answer this purpose, and may be given one every night and morning, or two at night, or every other night. The diet, in all cases, should depend on the state of the system, and during the symptoms of active hemorrhage patients should be kept as still as possible.

would be occupied in discussing the pathology of dropsy as connected with the several kinds or forms.

Modern authors divide dropsical affections into *serous* and *fibrinous*, and predicate the distinction, which is well sustained by chemical experiments, upon the origin and character of the two effusions. In serous dropsies the fluid is identical, in every respect, with the serum of the blood. Though each case examined may present a slight difference in the chemical properties of the effused fluid, yet the difference is no greater, in this respect, than it is between the serum of different individuals, as found by Paget in a series of experiments performed by himself. In fibrinous dropsy, the effused fluid is found to contain a portion of dissolved fibrin, resembling, in its chemical composition, the plasma of the blood. (*Vogel.*) These different forms of dropsical effusion do not always present the unmixed properties of the two typical fluids referred to, but are frequently more or less mixed with blood, pus, and other extraneous substances.

Serous dropsies are far the most common, and indeed constitute most of the dropsical affections we are called upon to treat. The fluid found not only in the cellular membrane of the system, but also effused into the cavities, is generally limpid, or but slightly colored, occasionally turbid, yellowish, slightly green or opaque, possessing generally an alkaline reaction, and of a thin or fluid character, though in some instances quite viscid and thick. Sometimes slight traces of epithelial cells, blood corpuscles, and other products of organic substances, and occasionally deposits of inorganic matter, are observed when examined under the microscope. The most general appearance of dropsical fluids is nearly colorless, or of a slightly yellowish or green color, and this difference is by no means a necessary character, as it is dependent on bile pigment. Apart from these accidental admixtures, the chemical composition of dropsical effusions is identical with the serum of the blood. The predominating substance found in all fluids is water; besides this, dissolved albumen, extractive matter, fat, and various salts, are the main ingredients of serum. The following is about a fair average of the results

general, as when the condition of the blood, and the associated weakened state of the vessels, produce a general venous engorgement or obstruction. Thus general dropsical effusions, and anasarcons swellings, are the common attendants upon organic disease of the heart and lungs, preventing a free circulation of venous blood. The same results frequently follow the want of healthy distribution of nervous energy in paralytic affections.

The majority of the cases which we are called to see result from the *condition of the blood*, and this is by far the most important point to be observed in accounting for the affection. Magendie, in his usual perspicacious method, found that dropsical effusions follow defibrination of the blood, either by direct chemical action upon the fibrinous element, or by abstracting largely from the blood and thereby effecting the same result, or by injecting large quantities of water into the vessels. I need not refer you to the frequent dropsical cases that follow either from excessive bleedings in the treatment of certain inflammatory diseases, or from profuse hemorrhages, and from other disorders in which an impoverished fibrin is a prominent symptom, such as anemia, consumption, and the like. Impoverishment of the blood and dropsical effusion may also follow long continued torpor in the cutaneous transpiration, and from suppression of the urinary secretion, by which the watery or serous portions of the blood are retained in the circulation, and thus produce an excessive fullness in the circulating vessels, and destroy that nice equilibrium found by direct experiment to be indispensably necessary to healthy circulation. In this state of things, for the purpose of keeping up a due proportion in the component principles of the blood, nature immediately sets about the process of disposing of the excess of serum by exosmose and endosmose, or the mechanical percolation of the fluid through the coats of the vessels, a process which is facilitated by the adaptation of the excessive fluid to the anatomical arrangement of the venous tunics.

There can be little doubt that this economy of nature greatly controls dropsical accumulations, and disposes of the exces-

empty, the serous fluid passes readily into them, or in common language is absorbed. The venous absorption is explicable, therefore, upon the principles of endosmose and exosmose." The rapidity with which fluids are thus absorbed or exhaled, depends somewhat upon the character of the fluid to be disposed of, but more upon the condition of the circulation, as regards the fullness of the blood vessels. Thus, says the same author, "when the vessel is moderately full, the exterior fluid passes uninterruptedly inward, and is conveyed away by the internal current. When, on the other hand, the vessel is much distended by its contents, the contained fluid, or its thinner part, passes continually outward. And there is an intermediate distention, at which the pressure is just enough to prevent the transit of fluid in either direction. Magendie found, accordingly, in an ample, well conducted and conclusive series of experiments, that by regulating the conditions of the comparative emptiness or fullness of the circulating system, he could accelerate, retard, or suspend altogether the operation of a poison dissolved in the humors of the body. In other words, he could thus accelerate, retard, or prevent the process of absorption or imbibition through the blood vessels."

I need scarcely say to you that there is constantly going on, from all the surfaces of a healthy system, such as the inner parts of the shut cavities, the cellular tissues of the whole system, and the outer surface of the body, an exudation of serous fluids, for the purpose of moistening, in order to prevent adhesion, and promote a free movement, of the parts, and as a renovating process for the purposes of health. This is shown very clearly by the moist condition always existing in those parts, and by the moist vapor observed upon opening the cavities of healthy animals, as well as by the natural state of the skin. This exudation being constant would necessarily accumulate in the shut cavities, and prove fatal, but for a counteracting operation which is just as constant. Thus while the natural and healthy balance of the system continues, only the amount necessary to the legitimate purposes of the parts will be exuded. But when there is either

when the perspiration is abundant, the urine is proportionally contracted and scanty. On the other hand, during winter when the external transpiration is checked by the operation of external cold, the flow of dilute water from the kidneys is strikingly augmented. All this is well known to be compatible with the most perfect health. But supposing the exhalation from one of these surfaces to cease, or to be diminished, without a corresponding increase of function in the related organ, or in any organ communicating with the exterior, then dropsy in some form or degree is very apt to arise. The aqueous fluid, thus detained in the blood vessels, seeks and at length finds some unnatural inward vent, and is poured forth into the cellular tissue, or into the cavities bounded by the serous membranes."

Serous dropsical accumulations may be *known by the fluid albumen* which is found by chemical tests, or the application of heat, to exist as one of its constituents. By heating a small quantity of the fluid in a silver spoon, or any other appropriate vessel that will not influence the albumen, a whitish coagulum will be shown, or the precipitate may be made by the addition of a small portion of nitric acid. There are some cases, however, in which so small an amount of albumen exists in the effused fluid as to be inappreciable either by heat or nitric acid. In such cases it will be sufficient to determine that it is not fibrinous exudation, which will be shown by the absence of fibrin, a spontaneous coagulation being recognized upon cooling.

Fibrinous dropsy is distinguished from the serous by the dissolved fibrin which an appropriate examination readily detects, and especially by the difference in the circumstances and condition of the system in which it occurs; though it is liable to occur in the serous cavities or cellular structure of the system. Like serous dropsy, the fluid is found to present the same physical characters and chemical properties, whether it occurs in the cavities or cellular structure. In its physical appearance, when first discharged, it resembles in every respect the purely serous effusion; a microscopic examination develops more difference, though not sufficient to settle its

properties of the walls of these two divisions of the vascular system. The veins have thick walls, consisting of several layers of cells and fibers, while the walls of the capillaries are very thin and delicate. It is true, that we cannot accurately estimate the differences in their endosmotic properties, but from analogy (from all the experiments that have been made in this department) we may conclude that the product of endosmosis, in the former case, is more dilute and poorer in solid constituents; and that in the latter, it is more concentrated and abundant in them. Secondly, as we have already shown that serous dropsy is associated with dilatation of the veins and attenuation of their walls, so we learn from microscopic examination of the capillary system, that a dilatation of those vessels and an attenuated condition of their walls, precedes, and is associated with the occurrence of the fibrinous fluid, either in the parenchyma of an organ, or in a cavity. The simultaneous occurrence of the effusion and the modified condition of the vessels is, however, so constant, that we may conclude with all the certainty possible in such cases, that the dilatation of the capillaries is the cause of the effusion. It naturally follows, that in the gradual transition of the capillaries into veins, there is no rigid limit between fibrinous and serous dropsy, and that one may easily merge into the other. Further, many causes producing a dilatation of the capillaries can likewise act in a similar manner on the veins; hence the two processes are very frequently associated together; and thus, in the fluid of serous dropsy, we very often meet with small quantities of fibrin."

In this, as in all other effusions from the body, both its physical and chemical character will differ somewhat, according as the *composition of the blood* is found to vary in different constitutions. Thus, in systems abounding in a large proportion of fibrin, we should expect, in case of dropsy, to find a more abundant supply of that principle in the effused fluid than in other systems; and so, when an undue amount of serous or watery fluid exists in the circulation, and circumstances occur capable of producing fibrinous dropsical exudation, no doubt can be entertained that the serum would be

uniform symptom. This, however, cannot always be readily determined, as what would be a diminished urinary secretion sufficient to produce disease in one case, might be a sufficient amount to answer the purpose in another case ; so that the relative amount that is daily discharged will have to be the rule to determine its influence in the production of the disease. The views I have endeavored to inculcate, in regard to the pathology of dropsy, fully justify the observation that cases of the disease here and there occur in which the urinary secretion may be as free as in health. These cases will be found connected with a large predominance of serum in the blood, associated with great inactivity of the skin and other secretory organs. The character of the urine also differs ; in most cases it is dark brown or reddish brown ; but in some it exhibits various shades from very dark and almost bloody to light or yellow, with sediments of different kinds, according as alkalies or acids predominate in the system. In most cases of the acute form of the affection the urine will present the high or red color common to febrile or inflammatory affections ; when complicated with hepatic disturbance the urine is very apt to partake of the color of that secretion ; and when complicated with organic renal affections the urine is more highly colored, and often mixed with blood. In the anasarcons exudations attendant upon Bright's disease, the urinary secretion presents, upon proper examination, an element not common in other forms of dropsy, though I am convinced it will not be found to differ very greatly from the secretion sometimes connected with low grades of irritation elsewhere located. This peculiar substance can be detected in various ways, but the most eligible is by heat or the use of nitric acid.

An abnormal condition of the skin may always be looked to as one of the most unvarying symptoms of dropsical affections. A peculiarly dry and husky or parched feeling of the skin will be found the common condition, and there will be great difficulty in producing perspiration by any means. The bowels are sometimes irregular, perhaps most frequently costive ; though this is an occasional symptom, and when

The causes already enumerated may contribute, also, to produce a condition of the blood favorable to serous exudation. But whatever tends to impoverish the vital constituents of the blood performs an important part in the production of dropsy. Thus, protracted diseases, especially of the liver, lungs, and other important organs, and unwholesome or insufficient food, are among the causes of this disease. This is most likely to occur when the patient has been the subject of severe medication without obtaining relief, and is especially the result of the constitutional influence of mercurial remedies. But no cause is more certain to develop dropsical affections than disease of the kidneys, by which they are prevented from eliminating the usual amount of fluid, a part of which is thereby retained in the system; and in that class of affections is Bright's disease, which I have already discussed, and which most frequently produces anasarca, and, probably, serous effusion in the ventricles of the brain. Diseases of the heart, too, are very prolific of influences productive of dropsical difficulties, and the character of the disease in such cases will depend upon the local predisposition existing at the time. This will be found to be one of those general influences operating upon the whole venous circulation, producing of itself no particular determination, and therefore the special attraction will be to that organ most strongly predisposed.

Prognosis. In general terms, dropsies may be considered among the medicable affections; though few diseases require more of qualification in this respect. Effusions unconnected with affections of the kidneys may generally be removed, and, even when the renal organs are the special seat of disease, if appropriately treated at an early stage, may generally be cured; but if connected with long standing and severe organic disorder of those glands, but little hope can be entertained of final restoration. A difference will be found in the curability of different dropsical affections, and also in different constitutions. Thus, hydrothorax is not as readily relieved as ascites, nor are those cases, which approach very gradually and are associated with an exhausted condition of the system, as readily cured as those which approach more

state of the system, and especially important for the cure of disease. In addition to rallying these important secretory functions, and often as the best and most effectual means of accomplishing that object, general restorative measures and tonic remedies become a very necessary part of the treatment, and, in fact, their influence in building up the waning energies, and invigorating the weakened organs of the body, affords, in many cases, almost the only means of restoring the secretory functions to their healthy action.

To be a little more specific, and yet without giving special directions for the administration of the different remedies applicable to particular cases, I will detain you a short time by considering some of the most prominent measures calculated to fulfill the general indications of this class of diseases. Prominent among the remedies designed to fulfill the indications of these affections, by acting upon the kidneys and thereby increasing their secretion, are diuretics. It will be observed that a pretty constant symptom, attendant upon most cases of dropsy, is a diminished urinary secretion, and experience has abundantly shown that, when remedies fail to increase the action of the renal organs, but little permanent amendment may be expected; while, on the contrary, when the measures used are successful in exciting a more vigorous action, and in sensibly and permanently increasing the amount of the urinary secretion, they will rarely fail to diminish, as sensibly, the serous exudation which constitutes the apparent difficulty in the case. It is often difficult to determine whether a remedy possesses specific diuretic properties, or whether it acts by diminishing venous congestion, or by the influence it exerts upon other glandular organs, thereby relieving the system of those embarrassments concerned in perpetuating the disease. But we may reasonably conclude that those remedies, which experience has abundantly shown uniformly increase the urinary secretion, do exert specific influences upon those glands, and are therefore properly classed among diuretics. It is not, however, those remedies alone that possess the property of acting upon the secretory function of the kidneys that are found the most efficient in all cases,

other substances are known to act directly in the same way, but are not held in very high repute as curative in dropsical affections, being more appropriate for certain fevers and other diseases, in which they afford some relief by a moderate increase of the urinary secretion.

But there are other remedies, far more reliable in the cure of dropsies, which possess no direct diuretic properties, but afford relief by their effects upon the circulation and other functions, and, indirectly, upon the renal secretion, thus giving them the apparent properties of diuretics, and entitling them to rank in that class of therapeutic agents. Such, no doubt, is the character of the *apocynum cannabinum*, one of the best and most reliable remedies for dropsical affections. The same may be said of many other articles, known to be more reliable in the treatment of dropsies than those whose action is specially directed toward the renal organs. This, no doubt, is the proper explanation of the effects of *digitalis*, *squills*, tobacco, and many other medicines recommended for these diseases.

In many cases cathartics exercise a more important influence in curing dropsies than anything else that can be given. They may produce their beneficial effects in various ways, but the most decided and obvious is by their direct diversion of a large amount of serous matter from the circulation, and the consequent change from an exosmose to an endosmose of serum through the venous tunics; and also by their influence on the portal circulation, relieving the venous obstruction generally, and the abdominal circulation in particular, and by this means diminishing the excessive exudation that is producing the disease. The positive amount of serous fluid abstracted from the mass of the circulation, by the full and free operation of a hydragogue cathartic, cannot be very exactly determined, though little doubt can be entertained that it would far exceed that which can with any safety be taken by bleeding. From this it can be inferred that the utility of this class of medicines, in the treatment of dropsical affections, cannot be too highly estimated, and it is certainly not surpassed by any others used for this purpose. It is gene-

more important influence upon the venous circulation, by removing obstructions from the venous ramifications, and thus creating in them a demand for absorption not otherwise accomplished. The relaxing and diffusible influence of emetics is too well known to require remark.

Though the condition of the skin bears a very close relation to internal exhalation, and though elimination through this important emunctory is a certain mode of contributing largely to the cure of these affections, yet we cannot expect the extraordinary discharge through this outlet that can be obtained from the bowels and kidneys ; and we cannot, therefore, administer active diaphoretics or sudorifics for the cure of most cases of dropsy, as their copious action cannot be long continued. But mild diaphoretics, or such as keep up a moderate and healthy perspiration, if it be nothing more than insensible transpiration, will do much toward the cure. Those cases, however, which come on suddenly from cold, such as we frequently find following the exanthematous affections, will be greatly benefited, if not entirely cured, by a thorough sweat, which may be repeated. In these cases the steam bath of Dr. Thompson would, without doubt, be beneficial, though the stimulating concomitants might be seriously objectionable. Whatever other, or internal measures may be resorted to for the purpose of exciting diaphoretic influences, sponge, shower or *douche* bathing should never be neglected.

Counter-irritation, over the part affected, where the effusion is kept up by local irritation or chronic inflammation, is a means by which you may often strike an efficient blow at the cause of the difficulty. Where the effusion depends, however, upon an anemic condition of the patient, and a relaxed condition of the tissues, the employment of counter-irritants is of no avail.

In regard to diet, different states of the system require a different course. Where there is an inflammatory condition, either general or local, a simple unirritating regimen should be prescribed ; but the anemic and debilitated patient must

LECTURE LXXIII.

DROPSY—CONTINUED.

HYDROTHORAX—*Definition—Symptoms—Percussion and auscultation—Anatomical character—Causes—Treatment.* **HYDROPERICARDIUM**—*Symptoms—Cause—Treatment.* **ASCITES**—*Definition—Symptoms—Dissection—Diagnosis—Causes—Prognosis—Treatment—***OVARIAN DROPSY**—*Description—Encysted tumors—Quotation from Dr. Wood.* **ANASARCA**—*Symptoms—Diagnosis—Causes—Treatment.*

HYDROTHORAX—DROPSY OF THE CHEST.

The term hydrothorax literally signifies *water in the chest*, but the ordinary understanding confines the accumulation to the pleural cavity. I shall consider the subject according to the latter signification.

Symptoms. Accumulation of watery fluid between the reflections of the pleural membrane may be associated with a general *dropsical diathesis*, and thus be connected with other forms of the affection; or it may result from *local irritation*, and be connected with, or follow other diseases. To constitute the disease, the effusion must be sufficient in amount to embarrass the pulmonary functions. It is not enough that a slight quantity of serous accumulation should be found in post mortem investigations, to constitute pleural dropsy; as that may result from cadaveric change, or from a mere temporary ascendancy of the exhalants in that membrane over the absorbents; or from an inequality in the balance of those vessels which furnish and remove fluids necessarily existing in all serous cavities. The accumulation, however, varies in different cases, and also in the different stages of the same case, producing symptoms corresponding to the extent of the

disease. Before the accumulation has become so extensive as to produce great embarrassment of the pulmonary organs, change of position will be accompanied by a corresponding change in the effused fluid; and it has been said that a distinct agitation can be heard upon the movement of the chest. If the case is one of a general dropsical character, the extremities are liable to become anasarcons, and frequently edema of the face and some other parts of the system will be observed. But if the case has resulted from local irritation, without any general dropsical tendency, the case may go on to a fatal termination without any such occurrences. From whatever cause it may originate, a diminished urinary secretion will be found to exist, and a dry and husky condition of the skin. The pulse will vary in different cases; in some it will be but little affected; but, mostly, the arterial action will be increased, somewhat in proportion to the amount of irritation existing in the case, and the embarrassment from the accumulation.

The most unequivocal evidences, however, are those afforded by percussion and auscultation. Even in the early stage, the dullness on percussion will be apparent; but, as the effusion increases, this becomes more sensible, gradually increasing until a complete dullness will be observed. In the early stage, the dullness on percussion will depend upon the position of the patient; when in an erect posture, the dullness will be found in the lower part of the chest, but as the effusion increases it extends gradually over the whole side. In no other disease does the dullness on percussion thus change, corresponding with the movement of the accumulation upon the change of position. Thus, in consolidation of the lung from any cause, by which dullness on percussion is produced, but little difference will be observed upon any change of position; but when the obscure sound results from watery accumulation before the effusion is so extensive as to firmly compress the lung, percussion will yield a clear and resonant sound on portions of the chest, where, by change of position, it becomes flat and dull. Similar indications are afforded by auscultation. In the early stage, more or less of the natural respiratory

pleural cavity, and the patient is overpowered by accumulation, and sinks almost before danger is once apprehended.

The *anatomical phenomena* presented in hydrothorax are what would be expected from the circumstances of the disease. One or both of the lungs, as the effusion affects one or both sides, are found greatly compressed: generally forced from the most depending position. But if the accumulation has been circumscribed by adhesions, either consecutive to the irritation resulting in effusion, or of an older date, the compression will show a corresponding boundary. But in cases of extensive accumulation, where the compression has been great, not only the small vesicles of the air tubes will be obliterated, but bronchial tubes of considerable size will be destroyed by the extension of the compression toward the center of the organs. They will not, however, be totally or permanently obliterated, as they can be more or less inflated by blowing into the trachea after they are removed. The character of the effusion does not greatly differ from dropsical accumulations in other places, though in every situation this difference will depend upon the associated conditions. In cases connected with the general dropsical condition, the fluid will present nearly a clear watery or slightly yellow color, having the true character of serous effusion. But if the case has been accompanied by an engorged state of the capillary vessels, the effusion will have more of a sero-sanguineous appearance, or will be more limpid, but slightly thicker, resulting from the fibrin which it contains. The quantity also differs, and no doubt is greatly influenced by the same cause affecting the character. It varies from a small amount to quarts or even gallons.

Causes. All those influences which have been mentioned as causative of dropsy in general, may be influential in producing hydrothorax. But the most common cause of this form of dropsy, I am well convinced, is the practice that formerly prevailed more than at present of bleeding in most forms of fever, and especially if any inflammatory condition was suspected of complicating the case. Slight sero-fibrinous effusion follows, or is associated with, most cases of pleuritis

rapidly, a more healthy assimilation than would otherwise take place, which will give tone and strength to the system.

But the prescription upon which I have mainly relied, in this and most other forms of internal serous accumulation, is the *apocynum cannabinum*, or Indian hemp, and *podophyllum peltatum*, prepared in the form of a syrup, and taken in doses sufficient to produce from two to four free evacuations from the bowels in twenty-four hours. I have usually prepared a quart of the syrup at a time, from an ounce each of the articles named, in decoction, afterward adding loaf sugar sufficient for the purpose, say about a pound to the quart, and a gill of good Holland gin. Of this a tablespoonful three times a day before eating should be given, but increasing or diminishing as the medicine is more or less active. In connection with this, I have generally administered about eight grains of the iodide of potassa twice a day, but frequently giving, as a substitute, the cider and elder preparation recommended for anasarca. This prescription will rarely disappoint your expectations in, at least, affording all the relief that may be looked for from internal remedies in this and kindred affections. I by no means claim that it is a specific, and will cure all the cases for which it may be prescribed, but that it acts efficiently in the way of removing from the system serous effusions, and oftener affords more permanent relief in such cases than any other remedy with which I have had any experience. While it seems to unlock the great portal circulation in particular, it produces but little less marked effects upon venous obstruction, wherever it may be found to exist, and thereby promotes in the most effectual manner possible the endosmose of fluids through the venous tunics. Few, if any, known remedies have a more manifest effect in promoting the absorption of serous effusion, whether in the lungs or on the brain, whether in the peritoneal sac or ovarian investing membrane, than the *apocynum* when given to the point of toleration without producing vomiting; by virtue of what peculiar property it produces this effect is not easily determined; and, in fact, whatever may be said on this point must be looked upon, in the present state of our knowledge, as merely theoretical.

impoverished condition of the blood, the food should be nourishing and free, as much so as the stomach can digest without requiring too much expenditure of the vital powers.

HYDROPERICARDIUM—DROPSY OF THE HEART.

It is only for the purpose of a clear diagnosis of this form of dropsy that I feel called upon to notice it. It is strictly comprehended in the term hydrothorax, that term signifying water in the chest, and for all practical considerations, except barely for the purpose of correctly apprehending the difficulty, might be allowed to pass in that connection. As in the cavity of the pleura a small amount of fluid always exists as a natural effusion, so there is always a small quantity in the pericardium, and this is frequently augmented from cadaveric change, or from previous accumulation without any inconvenience. It is, therefore, in such cases, only a manifest embarrassment from the effusion that can call for special consideration. It may be difficult to determine what amount may be tolerated without inconvenience, but frequent observation has clearly shown that from a drachm to two ounces, and perhaps more, may be contained without any embarrassment.

Symptoms. There are, perhaps, no well defined symptoms, produced by accumulation in the pericardium, that are not more or less associated with other affections of the heart; we must, therefore, depend upon the whole presentment of the case. We must not merely rely upon the symptoms of dropsy in general; for hydropericardium is frequently associated with other dropsical affections. Nor will it answer to depend upon the inability to retain the recumbent posture, a small irregular pulse and dyspnea, purple lips and imperfect aëration of the blood, as these symptoms often coëxist with other affections of the heart. Nor yet will an extended dullness over a considerably larger space than is natural suffice, as the same symptoms grow out of hypertrophy of the heart.

But when we find, along with this extended dullness on percussion, and that somewhat changeable, as shown by

ment. I will, however, reserve a few remarks for ovarian dropsy proper, and will at present proceed to consider ascites.

Symptoms. This affection generally makes its approach very gradually ; often without any marked evidences of local disorder. But most generally it follows protracted fevers which involve the abdominal viscera, or attacks of peritoneal inflammation supervening upon child-birth. It occasionally takes place after other protracted cases of disease which produce general disturbance, and especially cause a deterioration of the blood. It will usually be first observed by a slight fullness, accompanied with some uneasiness in the lower part of the abdomen, which, if carefully examined, will be found slightly tender upon pressure. It gradually increases, and often to an immense extent, producing a projection of the abdominal parietes almost to bursting, displacing the liver and spleen, and greatly compressing, and often embarrassing, the other viscera. Watery accumulations in the abdomen will be readily recognized, after a little experience, by the wave-like motion communicated to one hand, placed flat upon one side of the tumor, from gently tapping the opposite side with the other hand. A more satisfactory process is, to place the hands upon the opposite sides, in close contact with the abdomen, and by a sudden pressure, first with the fingers of one hand, and then with the fingers of the other hand, the sensible fluctuation or wavy motion will be recognized. We are told, indeed, by respectable authorities that, where the quantity of water is small, the fluid cannot be thus felt ; but I have never experienced any difficulty in this respect when the examination is properly made, and care is taken, in alternating the movement of the opposite fingers, to allow the hand, that is to receive the impulse, barely to touch the surface, so that the sensitiveness of the nervous extremities shall not be lost by too great pressure. But if there should be any difficulty in this respect, the sound emitted by percussion will generally afford additional satisfaction. This sound is more dull and flat than is afforded under other circumstances ; in fact, the very outlines of the accumulation can generally be determined in this way.

present a darker or partially sanguineous appearance, with flocculi of albumen, or fibro-albuminous flakes in it. The quantity also varies from quite a small amount to a number of bucketfuls. I have myself drawn off three medium sized bucketfuls at one time.

Diagnosis. Ascites is liable to be confounded with, or mistaken for, pregnancy, tympanitis, disease of the ovaries, and other abdominal tumors. From pregnancy it will readily be distinguished by percussion, and the absence of fluctuation. The drumming and elastic resonance, with the absence of fluctuation in tympanitis, will render the distinction not very difficult nor uncertain. The history of the case, and the position of the tumor, both in ovarian affections and in case of the distended bladder, will afford a sufficient guarantee for the correctness of the diagnosis. When pregnancy is complicated with ascites, it may be difficult to determine the precise state of the facts; but, by careful examination, the fluctuation should be readily ascertained, and, generally, but little difficulty should be experienced in feeling the hardened, irregular contents of the uterus. If, however, this should not prove satisfactory, a per vaginam examination will decide the question with considerable certainty. In cases of excessive accumulations of fluid in the cavity of the uterus, presenting the characteristic fluctuation of ascites, by careful compression in various directions, moving as much as possible the tumefied accumulation, you will rarely fail to find the irregular prominences peculiar to such a condition. It is sometimes difficult to clearly define, if not to detect, the extent of the complications of indurated, tumefied organs, occasionally existing prior, or subsequent, to the occurrence of water in the abdomen. By continuous pressure at a single point over the region of the organ suspected of disease, the fluid will generally be displaced, so as to enable you to arrive at a reasonable conclusion in regard to the character and extent of the disorder.

Causes. What has already been said in regard to the causes of dropsy mostly applies to ascites, and, therefore, little can be added on the subject. The more frequent occurrence of ascites would suggest, perhaps, that some influences

from their complications or other circumstances, cannot, in the present state of our knowledge, be cured. The disease sometimes continues for years, after repeated tappings, and, in some rare instances, is then removed; but most generally this operation affords merely temporary relief, the disease shortly returning and going on again, until the force of the system is exhausted, and it finally sinks from sheer weakness, or by a sudden metastasis to the heart or brain.

Treatment. The indications for treatment of dropsy of the abdomen are essentially the same as those presented in hydrothorax, and, with slight variations, the same remedies, used and applied in a similar way, will be found equally applicable in the former and latter. The only modification required will be in those cases where the disease is complicated with affections of the liver and spleen, and some others of the abdominal viscera. In addition to the various preparations prescribed for hydrothorax, I would recommend the compound taraxacum pill, which I have heretofore frequently directed, for complications with inactivity of the liver. One or two of these pills should be given every day, and will be found, at least, to answer as a substitute for the syrup of apocynum, when that preparation is not at hand; though, generally, the syrup will be an efficient cholagogue aperient, as well as diuretic. But when the bowels are irritable, with dyspeptic symptoms, the tongue presenting a red or smooth appearance, with epigastric tenderness, and the common remedies cannot be borne, a pill prepared from the alcoholic extract of dandelion, elder, and Indian hemp, in about two parts each of the first two, and one of the latter, and worked up with pulverized liquorice, will be found a valuable preparation. If an irritable pulse is observed, a grain of digitalis may be added to each pill, and one given twice or three times a day. But when they can be borne, an occasional hydragogue cathartic of antibilious physic and cream of tartar, and the daily use of the syrup of apocynum and podophyllum, together with the iodide of potassa, or the elder and cider decoction, will be found the most efficient and reliable internal remedies that can be used. In some of the cases presenting a pale and

very little danger, though in greatly contaminated systems peritoneal inflammation might be thereby superinduced and prove fatal. The common method of performing the operation is with a trocar and canula; but I have found it more easily performed with a common lancet, immediately introducing a silver tube, with a button-like head soldered on to one end of it to prevent the tube from passing in, and so arranged as to allow the fluid to pass out through it. The advantages of this method over that with the trocar and canula are, that it is performed with ease to the patient, and does not, by bruising the parts, produce a liability to inflammation. Whatever method may be preferred, it is always necessary to follow up the retreating abdomen with a bandage, to supply, to some extent, the loss of the pressure which has so long been made upon the bowels and vessels, and for the want of which fatal syncope has been known to follow.

Permanent relief is said to have been afforded by injecting stimulants into the peritoneal sac, after evacuating the fluid, thus bringing on a slight peritoneal inflammation, by which the sac becomes obliterated, and the further effusion prevented. But it is an undetermined question whether it can be safely performed, and, therefore, I do not recommend it. I do not, however, apprehend the same danger that is generally attached to it, and if a favorable opportunity offered, I should, with the proper qualification, advise the patient to allow it, at least as the last hope. The same thing is every day done to reflections of the same membrane—only that they occupy a less extent—with entire impunity, and generally with complete success.

OVARIAN DROPSY.

The personal observations, which I have made, in treating two or three well marked cases of ovarian dropsy, have forcibly impressed my mind with the conviction that the *description*, which has been given by some modern authors of this affection, is not entirely correct. In two instances, to which I more particularly refer, I found an even and uniform tumefaction having all the characteristics of ovarian dropsy, a

that often accompanies the last stage of pregnancy, and which generally disappears with great rapidity when the pressure is removed.

The views I have here expressed are forcibly sustained by the fact that these encysted tumors rarely, if ever, have the constitutional symptoms, along with the local growth, of a dropsical character. "There is," says Dr. Wood, for example, no peculiar thirst, dryness of the skin, or scantiness of urine. The inconvenience arises chiefly, if not exclusively, from the mere distention, and the consequent pressure upon various organs." The history of the cases successfully treated shows that they were of the genuine dropsical character, and not the encysted and irregular tumors described by Dr. Wood; while the treatment of those cases clearly of ovarian growth shows, beyond doubt, that they had not the character of dropsy, and were, therefore, never amenable to the treatment generally found successful in dropsy.

Dr. Wood remarks: "Little need be said upon this point. All the remedies found useful in dropsy have been tried in this affection, and proved of little avail. The attention of the practitioner will be directed toward rendering the patient as comfortable as possible. Inflammation in the sac will be obviated by leeches, blisters, fomentations, emollient poultices, and cathartics, while the pain will be relieved by anodynes. Sometimes a gentle mercurial course may prove useful; and the preparations of iodine have been recommended. Frictions with iodine ointment over the tumor, steadily persevered in for a long time, may possibly sometimes be productive of benefit. When the distention becomes very great, and exceedingly inconvenient if not dangerous, tapping may be resorted to. The operation must be performed in the center of the most prominent portion of the abdomen, unless there may be reason to fear the division of an artery. This is necessary in consequence of the frequently cellular character of the cyst. But the operation is not without danger, and is never more than palliative, requiring, in general, to be very frequently repeated, as the cavity rapidly fills up. The dangers are of effusion into the peritoneal cavity, of inflammation of the

recumbent position is followed mainly or in part by its disappearance. In systems in which a general dropsical tendency exists, the swelling may first appear in the feet and ankles, or it may be first manifested by slight edema of the face or even of the eyelids, and gradually extend.

When it commences in the feet it gradually increases and extends up the limbs, though partially disappearing at night, until by slow encroachment it extends to the body, and at length over the whole system. It is not, however, alike over all parts of the body, but shows itself more distinctly in parts where the cellular membrane is the most loose, in which its appearance is more full and bloated, and often forms, in some parts, such as the prepuce of males and the labia of females, pendulous sacs distinct from the adjacent parts. The edema in the limbs differs greatly in different cases. In some the accumulation is so great as to present the appearance of large rolls of flesh on the limbs, the skin being tense and shiny; and upon the slightest abrasion, limpid serum will exude in considerable quantities and for a long time. In some cases the distention becomes so great as to rupture the cuticle, thus affording an outlet for the pent up fluid; and I have witnessed an instance where the discharge was so profuse as to afford at length permanent relief.

In most cases the anasarca is found associated with dropsical effusions into some of the cavities, as the abdomen or chest, and then presents a more difficult and tedious form of the disease to treat. Yet it is occasionally confined to the cellular membrane under the skin, where it continues to accumulate until the patient is harassed by the irritation attendant upon it, and finally becomes exhausted and sinks; or, by a sudden transposition, the fluid falls upon an important organ, overpowers its vital force, and the patient dies from the embarrassment of the organ involved.

The affection under consideration often occurs under circumstances that give to it very much the character of an inflammatory disease. Such are the cases that result from cold following scarlet fever, measles, and the like affections; or it may present the characteristic phenomena of a purely

no general course will be reliable in the treatment of this affection. When it follows the eruptive disease from a sudden cold, a thorough sweat should be produced by free draughts of warm, diluent, diuretic decoctions, as that of mullein leaves or parsley, aided by hot bricks wrapped in moist cloths, and continued for a number of hours. In these cases it will not answer to administer active hydragogue cathartics as in most other cases. And if the copious sweat and diuretic teas referred to are not sufficient to relieve the case, then the patient may be put upon a more general course of treatment. In such cases he may be allowed to take a wineglassful, three or four times a day, of the cider and elder infusion before referred to, prepared by steeping half a pound of the fresh bark of common elder in two quarts of hard cider. Or the cream of tartar and rock candy may be given as before directed, while the most thorough course of general bathing should be instituted. It may be done in cold, tepid, or warm water, as best suits the habits and condition of the patient. The diet in these cases should be light and mostly farinaceous, and the patient should be directed to take a moderate amount of exercise in the open air. With this course you will rarely fail to afford the desired relief. But should the case prove obstinate, in addition to these measures the patient should be directed to take, three times a day, eight grains of the iodide of potassa, and a gill of the decoction of *asclepias syriaca*. If the edema exists in the scrotum, warm fomentations may be applied with decided advantage.

For cases of anasarca of the lower extremities, which are often attendant upon the last stage of pregnancy, little more will be required than to keep the bowels free by the use of the cream of tartar and rock candy, and to bandage the limbs with a flannel roller every morning, when the serous effusion has been partially diffused by the recumbent position. This may be pursued until after confinement, when the removal of the pressure from the embarrassed veins seems to act as a suction hose, and the fluid is thrown off as by the engine of water-works. I have witnessed the most astonishing results of this kind in the amount discharged. Where the extremi-

to by frequent bathing followed by friction, and when the extremities become inflamed, as in some cases of anasarca produced by intemperance, they should be bandaged with a towel wet in cold water, and renewed once in three or four hours, and a roller applied with moderate tightness, while the patient is directed to be quiet and keep up the feet. The diet in these cases should be liberal and substantial, but, in all cases, governed by the demand and the ability to digest what the stomach willingly receives. The amount of exercise should also be governed by the ability to bear without fatigue, always recollecting that over-exertion is alike injurious to the general system and the local affection.

latter, and thereby to place them more distinctly in their true relation.

In order to understand what is meant by contagion, it is necessary to consider *in what contagious diseases differ from other known affections*. In the first place, then, they are supposed to be produced by a specific poison generated in the system during the progress of the disease, and capable of producing a like affection in other unprotected systems coming within the range of its influence, but not requiring immediate contact with the system from which it emanates. In the second place, all this class of diseases have certain general laws, controlling their influence upon the system, to wit: certain fixed periods of incubation, a regular rise, progress, and decline, and a certain property of protecting the system against future attacks of the same kind. These, I apprehend, will be admitted to constitute the main peculiarities of contagious disease. I need scarcely illustrate the first proposition, as, in regard to that, I am not aware that any difference of opinion exists among the profession. That smallpox, measles, hooping cough, scarlet fever, mumps, and chickenpox are produced by a specific poison, without coming in immediate contact with the subject of either of them is, I believe, an agreed point among medical men every where. The relative susceptibility of different persons to the several diseases named differs very considerably; and the greater or less immunity which each disease affords to those who have been affected by it, also differs in some respects. But the difference is not sufficient to change the principle, and should be considered in the light of an exception to a general rule. Thus, more persons may have second attacks of scarlet fever than smallpox, or of hooping cough than measles, or *vice versa*. Yet these second cases are not so rare in comparison with the perfect protection afforded in most of the cases, as to make the second attacks only exceptions to the rule of protection. Thus, too, smallpox may be communicated at a greater distance, and under circumstances that would render scarlet fever innoxious; so also of measles compared with mumps. Yet this difference in susceptibility, and the distance at which,

that is not governed by these general rules, cannot belong to this group of diseases, and must, therefore, be placed in some other connection. Having thus defined the principles of contagious disorders, we are now prepared to appreciate the propriety of the arrangement, and understand what diseases legitimately belong to this group. I shall accordingly proceed to consider the various affections of this class.

VARIOLA, OR SMALLPOX.

Smallpox is, perhaps, the most loathsome and offensive disease which afflicts the human family. It begins with the febrile stage, which continues about three days, and sometimes a little longer, and is followed by an eruption not very striking at first, but soon becoming characteristic. The eruption passes through several stages; first, of vesication, then of maturation, and lastly of scab or maturity, all occupying about eight days; so that the whole period of the disease, when running through its several stages, from the initial to maturity, occupies about twelve days, and the time intervening between the exposure to the cause and the initiatory stage will generally be found about nine or ten days.

Predicating a distinction upon a local symptom, indicative, as a general rule, of the violence of the attack, authors have recognized two forms of the disease, viz: *distinct* and *confluent*. The first is characterized by the single or isolated appearance of the eruption, and the last by its running together and forming more of a continuous vesicle and scab. The distinction, however, is one of mere fact, without any practical utility, both forms, when apparent, being generally exhibited in the same case. Partly for the convenience of its consideration, and partly as affording points for reference in the discussion of some of its doctrines, smallpox has been divided into three stages: first, the eruptive or initial; second, the stage of maturation; and third, the decline. But preceding the actual invasion of the disease, more or less of uneasiness and uncomfortable sensations will be experienced, not very unlike those that precede the actual developments of

other acute diseases. For convenience' sake, more than anything else, I shall follow this distinction of stages.

Symptoms and course. The first stage or actual commencement of smallpox commences, in most instances, with ordinary symptoms of remittent fever, with the addition of some few rather diagnostic symptoms. Chills or shivers of different degrees and various duration are the usual beginning, followed by febrile reaction, heat of skin, full pulse, furred tongue, thirst, epigastric tenderness, and usually disgust of food, nausea and vomiting. With these symptoms, there are a severe pain in the head, and an intense distress in the back, which sometimes extends down the limbs. It will be seen I have enumerated no symptoms not common to an ordinary attack of fever, and the only distinctions which will mark the case as one of a suspicious character, are the intensity of the pain in the back, and the irritation of the stomach. In some cases, even in this stage, a sore throat will be complained of, with other symptoms common to colds. In a few cases, the febrile symptoms are very violent, and in others, more or less moisture will be observed. Cases of high febrile reaction are often attended with determination to the head, a wild expression of the eyes, and violent derangement. In other cases, however, patients come stupid and difficult to rouse, and continue so throughout the progress of the disease. Others, again, are extremely restless, wakeful and uneasy, tossing about from one part of the bed to the other. In children the appearance of the eruption is not unfrequently accompanied by a severe and protracted convulsion. The fever usually continues with more or less violence, and often with distinct remissions and exacerbations, for three or four days, when the appearance of the eruption affords a partial relief, and the fever subsides. The eruption commences about the third or fourth day of the attack, with minute red specks upon the face and neck; afterward, upon the upper part of the chest, and gradually extends over the rest of the body and extremities. It is, however, in different parts of the system; in some places single small pimples will be seen; in others clusters of

and often the red points become for a limited space a continuous blotch. In this way the eruption continues to increase and extend until the fourth or fifth day, when it is fully developed, and with the increase of the eruption the fever declines, until it entirely subsides, leaving the patient in a comparatively comfortable condition.

The *second stage* is said to commence when the eruption is fully established, and then continues to change in somewhat the same order as in the first. At this stage the eruptions are supposed to begin to fill, though while some will exhibit the mere vesicular state, others present the more distinctly characteristic papular form, with a dark depressed center, and a more vesicular and raised border or circumference. When filled, they have a distinct hard feel, with an inflamed areola around them, and when they are numerous present an inflamed state of the whole intervening skin. The eruption gradually dries from the center to the circumference, the vesicles at the same time changing from a pellucid and, at first, conical pimple, to a flat and circular form, and to a dark maroon and, at length, nearly black color, when they dry up and scale off. While this is the character of a portion of the eruptions, others of them, and especially those on the limbs, lose their umbilicated appearance; a yellowish, white matter forms, and they swell out and exhibit the distinct sacculated shape, in which the cellular character of the vesicle is entirely destroyed, and upon being punctured collapse. The quantity of the eruption varies the appearance of the patient, both during the progress of the case, and during the drying in desquamation. In some cases, the face, even in the distinct variety, exhibits a bronzed and almost black appearance, with only here and there a point of a different appearance; while in others, there are clusters of dark scabs, with a large portion of the skin but little altered.

During the progress of the eruption, especially after maturation begins, a severe itching is felt, which in children is so intolerable as to induce scratching until the surface is made one bloody scab! The eruption is not confined to the skin, but is observed to extend into the nose, mouth, and even eyes,

scales have entirely disappeared, a reddish scar is left, and in severe cases the whole face presents a pitted and entirely red appearance, not much less than an erythema.

The *confluent* variety of smallpox differs only in the severity of the attack, and the extent of the eruption. The whole symptoms present a far more grave and violent character; the fever attendant upon the first stage is far more severe, and the pain in the back is so distressing as to constitute the main complaint of the patient. Convulsions are more common and severe, the delirium is more violent, and the stupor more profound. A troublesome cough and sometimes oppression of the lungs, oppressive dyspnea, and pain in the chest and stomach, are complained of. The eruption, in aggravated cases of this kind, presents a complete erythema, that exhibits no line or distinction over the entire surface; but this red and inflamed appearance is most frequently observed in distinct patches, with more natural and healthy skin intervening. A violent delirium is no uncommon attendant upon attacks of this kind, with great restlessness and often cold extremities.

As the disease continues the eruption increases, though it is not of the separate and distinct character of the other form but is of a continuous maturation, frequently an inch or two in extent; sometimes large portions of the skin present a dark purple appearance, with irregular patches in a vesicated and matted condition, while other portions of the eruption present a more distinct character. In some cases the large patches of eruptions produce so much of inflammatory action as to involve the subcutaneous structure, and the ulcerative process leaves a deep sore resulting in a cicatrix.

The eruption that occurs in the mouth and fauces is more extensive than in the *distinct* variety, and the attendant soreness of the throat is far more intense, and in some cases the accompanying inflammation extends to the larynx and trachea, and produces severe inflammatory croup. In this complication of the disease, there is great danger of infiltration into the submucous and cellular tissues of these parts, which might result in suffocation and complete asphyxia. This

this contaminated state of the blood, and the exhausted condition of the vital forces, local determination is quite liable to take place; and hence, when we may think our patient comparatively safe, and the case progressing with satisfaction in other respects, we are suddenly and unexpectedly called to encounter a local inflammation, either in the lungs, pleura, bowels, or some other important organ, which presents a very alarming state of the case, and endangers the life of the patient. Or if it progresses without any violent outbreak of local inflammation, the vitiated condition of the system is so general and complete as to render repair of the disorganization of certain parts, consequent upon the severe eruption, slow and imperfect. Thus, a severe bronchial cough, which may in scrofulous constitutions terminate in true phthisis, may continue; or the ulceration of the tarsi of the eyes, resulting from the eruption, may produce a chronic ophthalmia; or opacity of the cornea, often of an incurable character, may follow from the same cause. Nor are these the only consequences of this highly vitiated state of the system, provided the patient survives the consecutive fever following the absorption of matter. Deep and sloughing sores, or extensive abscesses of the more deep seated parts, often follow, as the method taken by the system to eliminate the virus thus diffused, and if nature is not sustained in this recuperative process, the system flags in its efforts, and finally wears out in the trial. But should the strength of the system prove paramount to the morbid influences, and, with the aid afforded by skillful interposition, throw off the poisonous virus, and repair as far as possible the injury inflicted, the least that may be looked for, in severe cases, after the slow process of desquamation, is a series of pits nearly covering the whole surface, and frequently large eschars, resulting from the more extensive absorption in the ulcerative process, and leaving the patient at best a scarred monument of the severity of the formidable disease.

I have thus endeavored to describe to you some of the various phases of this once fearful scourge of the human family, though now like the tamed lioness when incaged. And I may

attacks. And in proportion as those changes are produced, or the tissues filled with the contagious poison, will the susceptibility to future attacks be destroyed, and just in the degree that the changes referred to are not produced will be the extent of the liability to second attacks. Hence the great diversity in the violence and extent of the varioloid disease—in some cases barely producing the initial fever, with but little or no eruption, while in others it progresses to an extent almost equal to the most malignant attacks of the variola itself; thus shading off from an attack differing in no particular from a mild case of genuine smallpox, with copious and well defined papulous eruptions, to one which exhibits only the mildest premonitory symptoms, with a few eruptions, scattered here and there over the body, and imperfectly developed.

It may be supposed, also, that the peculiar arrangement of the molecules of the tissues, generally liable to the influence of the several contagious affections, is what produces or occasions the insusceptibility in those persons in whom certain of the contagious diseases never occur. Thus some persons without any previous protection may be exposed in the most complete manner to a malignant case of smallpox, without being in the least affected by it, and thus continue through life. Or possibly in after life, when the system has undergone the various changes attendant upon youth, maturity, and perhaps decline, the arrangement in the integral composition of the molecules of the tissues referred to, may have been slightly changed, or the vital susceptibility of the parts so altered as to render them obnoxious to its influence, requiring only a slight exposure to imbibe the disease. Facts observed justify this explanation.

The susceptibility of the system, as already intimated, seems to be modified not only in regard to partial exemption from the disease,—which is generally proportioned to the previous prophylactic influence, but also in regard to the *appearance* of the eruption. Thus in some instances the first manifestation of the eruption will be in the form of a diffused erythema, or scarlet rash, just as it sometimes occurs in the most malignant form of variola, with a high range of initial

passing completely through the several stages, it is much less liable to produce the marks common to smallpox.

The authorities mention a circumstance, said to occur both in connection with smallpox and other contagious affections, which I do not recollect ever to have observed, viz: the modification of one contagious disease by the existence of another of a different character. Thus, it is said, a patient may have the commencement of variola, and, by the development of measles, the progress of the smallpox is arrested until after the measles have disappeared, when the variola revives and goes through its regular course. The statement in my opinion needs confirmation. I should not doubt that the variolous poison, imbibed after the individual had been exposed to measles, might lay dormant in the system longer than the ordinary period for the development of its symptoms, and thus allow the measles to pass regularly through their several stages and disappear before the latent poison was brought into action.

Morbid anatomy. The only striking characteristics in the morbid anatomy of variola are shown in the skin and mucous membrane, though other parts and organs often become affected in the progress of the disease, but not in any way necessarily connected peculiarly with this disease. If all the morbid appearances found in fatal cases of smallpox were ascribed to that affection, as necessary attendants upon it, the disease of the lungs, brain, liver, and almost every organ of the body, would have to be described in this connection. Among the changes not common to most other affections, is the inflamed or injected condition of the inner coats of the arteries, though, as this is common to those diseases in which the morbid condition of the blood plays an important part, it is not considered peculiar to smallpox. In this, as in many other diseases of a malignant and putrid character, the blood generally exhibits less of the important vital elements than is usual. The fibrin is found mostly diminished in quantity, and the clot presents more of a glutinous and soft appearance than in health.

The structure of the pustule is interesting, more especially

being protected, would not feel its influence. This may well be questioned. There is no doubt, however, that if the mother was mainly protected, but susceptible to the contagion in a slight degree, it might be thus communicated to the unborn child.

The poison can be communicated by inoculation, and also through the atmosphere at a certain distance, but to what precise distance has not been determined, if indeed it can be. But I am well satisfied that much of error has been entertained on this subject, if not among the profession, at least by the community. I do not recollect an instance where it has been communicated to those living in adjoining houses, nor to a person passing in the street by a house infected. But the community is so generally protected at the present time that I am free to admit such cases are no fair tests, and occasions for making a test of the kind can rarely occur. There can be no doubt that the contagion can be communicated by being attached to clothing. But it may be safely doubted whether it can be communicated where the clothing has not been in actual contact with the poison, or when it has afterward been exposed to the air. I have myself, in numbers of instances, assisted in moving patients affected with the disease in its most malignant types, and, using no other precaution than simply washing my hands, have mingled freely with the community without ever conveying it; nor have I any knowledge of its ever having been thus conveyed. The distance at which it may be communicated in the atmosphere differs, I have no doubt, according to the quantity in the atmosphere, and must depend somewhat upon the current of air from the infected region.

In this affection one attack is, perhaps, more protective than in most other contagious diseases. The principle is that the disease is taken but once, and any variation is simply an exception. Still cases do occasionally occur where individuals have it the second time, and according to my experience more have it the second time after inoculation, than after it has come on in the "natural way." Smallpox occasionally prevails as an epidemic, and hence the question has

than the former. Those who are familiar with measles will have no difficulty in distinguishing that disease from smallpox, not only from the history of the case, but also from the appearance of the eruption. There are no characteristics by which to certainly distinguish the modifications of this affection; but the evidences of previous vaccination or variola will generally be a guide to an intelligible diagnosis of genuine smallpox and varioloid.

Prognosis. Few cases of uncomplicated attacks of smallpox, unless maltreated by untimely and harsh interference with drastic and inappropriate medicines, should prove fatal. Yet many cases of the severe confluent form of the disease, in the present state of our knowledge, do terminate unfavorably. But these compared with the whole number of cases bear but a small proportion, and hence in determining the average we are led to conclude that the prognosis should be put down as favorable. Yet in looking forward to the favorable termination of any case, many circumstances are to be taken into consideration. Thus a person of sound constitution, and free from tendency to local determination, would be more likely to pass through a severe attack of smallpox than an individual of a different constitution. A scrofulous subject, or one with a strong predisposition to gastro-intestinal irritation, would be far more liable to fatal results in this disease than others exempt from these tendencies.

The cases which commence with torturing pains in the back, and are accompanied with a rapid pulse and cold extremities, may always be looked upon as very violent cases, presenting cause for alarm, whatever may be the character of the constitution. The existence of the confluent and diffused eruption, presenting the appearance of an erythema, may always be regarded as indicating a degree of violence which renders the issue uncertain. When the case commences with violent convulsions, it may generally be considered an unfavorable symptom, though in children this may occur in cases that do not otherwise present any untoward appearances, and which may go through without any difficulty. The complications of

LECTURE LXXV.

CONTAGIONS—CONTINUED.

VARIOLA CONTINUED—*Treatment—Prevention of pitting—Quotation from Dr. Wood—From Dr. Jackson—Prophylactic measures—VACCINE DISEASE—Character—Origin—Experiments of Dr. Martin—Author's experiments—Symptoms of genuine kinapox—Difference of susceptibility—Protective influence—Best time for vaccination—Importance of healthy matter—Mode of vaccination—Revaccination.*

VARIOLA OR SMALLPOX—CONTINUED.

Treatment. In the uncomplicated form of smallpox, very little treatment can be instituted with any show of sound philosophy. No knowledge we now possess of the nature of the disease will enable us to arrest it, or to shorten the several stages of its progress. And as we lay no claim to a remedy that shall neutralize the poison or eliminate it from the system, all we can reasonably be expected to do is to watch the progress of the case, detect any local determination that may take place, and with such appliances as the circumstances will justify endeavor to stay its progress or divert its farther local determination; while we prevent untimely and improper interference, and make use of those general measures calculated to render the patient comfortable, and as free from suffering as may be.

The disease is not produced by morbid accumulations in the stomach and bowels, and therefore no remedies should be indiscriminately administered with a view of removing them. But if the history and symptoms of the case show the existence of imperfectly digested food, or morbid secretions

should be given in teaspoonful doses every hour or two, more with a view to satisfy the patient that something was being done, than from the expectation of any particular benefit, though it acts slightly on the kidneys, and also as a mild refrigerant diaphoretic. The diet should be of the most simple kind, allowing nothing more solid than rice gruel or arrow root, and these in small quantities. For drink nothing will be found more acceptable than the mucilage of marsh mallows, or cold water in small quantities. These, then, are the main and most reliable measures that I have had any experience with, and they should be repeated in whole or in part, as the present symptoms, or the circumstances of the case, seem to indicate. But be sure that no medicine is given without a necessity or some well defined indication for its use; recollecting that it is better to do nothing, than to attempt to do something which you are not clear is right or required.

During the progress of the case, some local determination may occur that may require the use of some of the measures appropriate in such complications in other conditions of the system. If it be pleurisy, cups should be freely applied to the seat of the pain, followed with hot fomentations and repeated frequently, if necessary to relieve the pain and subdue the inflammation. The same measure should be employed in other forms of local determination, with more or less efficiency, as the urgency of the case seems to demand. In the advanced stage of the disease, after the eruption is fully filled, and extensive maturation is taking place, rather more nourishment should be allowed; though great care is necessary not to allow too much. If the strength is greatly reduced, a small portion of beef tea and wine whey, or buttermilk, may be allowed, or a little thickened milk, if the patient has been used to it; while the surface should be more freely sponged or cleansed than in the early stage before the appearance of the eruption, or after it has come out. The simple nourishment prescribed for the latter stage of severe cases will not be sufficient to answer the requirements of the case. Here it may be necessary, from the state of prostration, and the em-

ver, as recommended by Bretonneau and Serres. The former cauterized each pustule separately, the latter made the application to masses of the eruption. The best plan is probably to open each pock upon the face, as soon as it has become vesicular, either by a pointed probe or lancet, and then to apply a stick of nitrate of silver brought to a fine point, or a very strong solution by means of a probe. The progress of the eruption is frequently thus completely arrested; and, at the end of a week, the scales fall off without leaving pits. To succeed, however, the operation must be performed as early as the second, or at farthest the third day. When the solution has been applied uniformly over large surfaces, it has been found that the work of suppuration and ulceration still goes on beneath the blackened cuticle.

“It is said that sulphur ointment, applied several times a day to the face, in the earliest stage of the eruption, has had the same effect. My friend Dr. Samuel Jackson, of Philadelphia, formerly of Northumberland, informs me that he has employed the tincture of iodine for the same purpose, with apparent advantage. He applied the tincture freely and continuously over the affected surface by means of a camel’s hair pencil.

“During the period of desquamation, advantage will sometimes accrue from the occasional use of the warm bath; and the patient should always resort to this measure before again mixing with the world.”

Dr. Jackson’s treatment, alluded to above by Dr. Wood, is thus stated by himself: “In April, 1845, I was led to make an experiment of aborting smallpox by the tincture of iodine, from contemplating its wonderful influence over erysipelas. I applied it to one arm of a child eleven months old, in confluent smallpox, on the third day of the eruption, and to the arm which appeared the worst, rubbing it freely on with a sponge three times that day and twice the next. On the eleventh day, when the pocks over the whole body were at their height, elevated with hard bases, those of the medicated arm were entirely flat, with thin, purulent matter under the dead cuticle, without any swelling of the part. In this state was the

treatment, is the *prophylactic measures* that have been instituted to stay its ravages and deprive it of its terrors. Up to the latter part of the last century, inoculation with smallpox matter was the only known method of preventing, or more properly of modifying, this most pestilential disease. This method had been known and practiced from the time beyond which medical history, on this point, does not run. It was, unquestionably, an important step in the progress of medical improvement, depriving smallpox, as it did, of more than half its terrors. Yet it can scarcely be compared, in its advantages, to the more modern discovery of vaccination, which has not only robbed the disease of its terrors, but rendered it comparatively harmless. But when vaccine matter cannot be obtained, no one should hesitate for a moment to resort to inoculation, where smallpox was prevailing, as a far safer method of going through an attack of the disease. Although it has, in the regular time, all the characteristics of the original and genuine disease;—the regular initial fever, the ordinary eruption, the peculiar umbilicated vesication, and, finally, the true smallpox scab;—yet it generally passes through the several stages with less severity and suffering, and in nearly all cases with safety. The secondary fever, if there is any at all, is but slight, though it may be considerable in the more severe cases, which are attended by a pretty full crop of eruptions; this, however, is rare. Inoculation is performed in the same way as vaccination, by inserting under the skin, slightly punctured, a small portion of the matter dried on the point of a quill, or by dissolving in the puncture a small particle of a dried scale. On the third or fourth day after its insertion, a slight stinging sensation is felt at the point of the puncture; and on the fifth day a small, hard elevation, and a slight vesicle, may be discovered on examination. The vesicle has the characteristic appearance,—flattened at the center, with a red or inflamed areola around it, and it finally goes on to maturation. About the seventh or eighth day, the patient feels rigors, alternated with flashes of heat, pain in the back, and followed by a decided fever. On the ninth or tenth day, a variolous eruption appears on

vaccination, should repeat the important truth, that Dr. Jenner conceived the thought that this most fatal scourge of mankind could be prevented by a perpetual propagation, from one individual to another, of a harmless disease, having its origin in the cow. It was a happy thought.

The disease from which kinpox matter originates appears to produce considerable effect upon the animal when laboring under it. The secretion of milk is suspended; the animal is thirsty, refuses to eat, and exhibits every evidence of serious indisposition at about the usual period for the genuine vaccine disease; while the local disease goes through the several stages of pimple, vesication, maturation, and scab, with the umbilicated appearance, in about the ordinary periods peculiar to each stage. It seemed to have been the opinion of Dr. Jenner that the disease observed in the cow was communicated to that animal by the hostlers, from a disease of the horse known as the *grease*. But more modern observation and experiments, besides all analogy, have clearly determined its origin to be smallpox itself, modified by passing through the system of another species of animal. Thus, in a number of well attested instances, both the vaccine matter and the scab have been obtained by inoculating a cow; while the phenomena of the operation, in the different stages of the inoculation, show the identity first observed in the diseases. I will not detain you by reciting the details of the various experiments which have been tried, but will barely read to you the account of an experiment by Dr. J. C. Martin, of Attleborough, Mass., which I find in the Boston Journal.

“Sir,—The following experiments may not be uninteresting to you. They were undertaken for the public good and the benefit of science. And although I have suffered severely in mind and purse, for making them, yet I am not sorry that the act has been committed; and all that I regret is that I am not located in a community, and surrounded by medical men, who can duly appreciate my motives, and encourage me in prosecuting a series of experiments which I feel convinced might lead to successful and happy results.

“A case of smallpox, in its worst form, having appeared

had increased in size and become more prominent, and was distended with matter. At this period it was not regularly round, but presented an uneven surface. On the *eleventh* day an evident change had taken place in the appearance of the pustule, it having begun suddenly to dry up. On the *thirteenth* day the virus had become solid, so that the pustule was converted into a crust, or scab, of a dark brown color.

“ Besides introducing the smallpox virus into the udder, I inserted some also into a puncture which I made on the hip of the animal. This resulted in a sore, and in the falling off of the hair. This inoculation produced no pustule or eruption, save at the point of insertion, so far as I could discover.

“ I now determined to insert some of this new generated matter into the human system, and observe its effects. Accordingly, I selected a healthy boy, aged ten years, for the subject of my first experiment; and on the evening of the 12th day of October, (the day I took some virus from the cow, being the tenth day of the existence of the pustule,) I inserted some of this virus into the boy's arm in same the manner as in practicing common vaccination. The symptoms resulting from the operation were the following: The virus lay dormant four days. On the *fifth day* a slight inflammation or red spot arose around the point of insertion. From this period the vesicle ran its course, like the common vaccine vesicle, was characterized by a well-formed and regular areola, and in due time was transformed into a perfectly round, mahogany-colored scab. The boy exhibited but little indisposition during the course of the disease, except headache, and he continued to play with his fellows about the street, and I saw no symptoms in his case which do not attend the vaccine disease in its various stages. It should be mentioned, however, that two or three small pimples appeared on the boy's face and arm. These did not fill, but soon dried and disappeared.

“ While observing the rise and progress of this disease, I had no doubt that the eruption was like, and that it was, the true and perfect vaccine vesicle. In order that I might not be deceived, however, I took the boy to Providence, and exhibited his arm to two physicians of that place, Drs. Toby

should feel highly gratified and honored with your opinion respecting them. J. C. MARTIN."

From a number of experiments performed by myself, I am very well convinced that vaccine matter cannot be regenerated or renewed by vaccinating the cow. I found in two instances, in which I inserted pure vaccine matter into the udder of a cow, that it was much longer in developing, though when it did come forward, it went through the several stages, and presented the physical appearance of a true vaccine scale, except in the color, which was much lighter. And though I inserted it carefully in more than a dozen instances, yet not the least effect was ever produced by it. In short, the second process seemed to have ended the race by producing a "mule."

The symptoms of a genuine or successful vaccination are somewhat peculiar, and worthy to be considered, though they require no medication for their relief. In the first place, the mode of inserting the matter is of some importance, though any method will answer which is uniformly successful. I have usually made a shallow puncture barely through the cuticle, not so deep as to bleed much, though in very young children it is often difficult to perfect it without more bleeding than is desirable—in which case the matter should not be inserted until after it has ceased. Then the matter, if the scab is used, after being dissolved in a drop of water, should be inserted on the point of a lancet, by placing the instrument carefully into the puncture, and lightly raising up the lip of the cut, when, by the vacuum thus made, the matter is forced from the lance under the skin. Or the point of a goose quill, previously charged with fresh matter, may be inserted into the puncture made as before, and allowed to remain until it is dissolved, when enough is very apt to be washed off to have the desired effect. Directly after the matter is inserted there is a slight swelling resembling the sting of a bee, though not so large, which soon, however, disappears, and the simple mark of the puncture remains for about three or four days, when a small pimple will be ob-

for a longer period than usual, but at length coming up and going through the regular course. And there is a great difference in the extent of the local disease; in some cases, only a very slight areola will be observed, while in others it is much larger than usual. In some instances an extensive inflammation seems to take the place of the slight tumefaction and areola peculiar to the regular disease, and considerable constitutional excitement will be connected with it, and at length a large smooth scar will be left, that has none of the genuine characteristics; and subsequent vaccination, or exposure to the smallpox, will prove that it was not protective against the disease. This is no doubt owing to the imperfect or spurious quality of the matter; though it may be in part referable to the early inflammatory action locally excited superceding the genuine vaccine irritation, and thereby subverting the protective influence usually realized. The vesicle of a pure vaccine pock is quite firm and not very readily lacerated; while that of the spurious kind is the reverse of this and easily torn, very few of such cases going through without being disturbed.

What has been said in regard to the physical character of the vesicle of smallpox applies almost precisely to the vaccine vesicle. The central depression is no doubt owing to an imperfect development of the characteristic cells of the true vesicle, produced by the adhesive inflammation that takes place at an early stage in the progress of development, and as a consequence of this a minute portion of pus is formed that does not contain the genuine virus. But the other portion of the eruption, when carefully examined, is found to be made up of minute double or concentric rows of cells, of a shining appearance, and filled with a limpid fluid. In removing the scale before it is dried, it is found isolated from the skin all through its under surface, except at the center, where the adhesive inflammation binds it to the true skin with very considerable firmness. The genuine vaccine matter contained in these cells is limpid and viscid, and does not lose its transparency when dried, as may be seen by charging the point of a quill while in this state, but is readily dissolved in

successful vaccination, cannot fail to create some fear in the minds of duly cautious persons that the experiment is not sufficiently protective, and thus induce them to further trials. The existence of other active and acute affections seems to destroy the susceptibility to the infection for the time being, preventing any local effect from even the purest matter. But the existence of other eruptive affections not of an acute character does not appear to essentially change the character of the vaccine disease, or interfere with its prophylactic influence. And if the matter is inserted so as to have the period for its influence occur at the time for the active stage of some other contagious eruptive affection, it is always retarded, or lies dormant until the other declines, when it comes forward and pursues its regular course. But it is not so with some other contagious diseases, hooping cough for instance, as the system seems equally susceptible to the impression of the vaccine operation during the most active stage of that disease, and it has been recommended to insert the virus in such cases with a view of modifying the severity of that affection. But I am well convinced from repeated trials that it has no such effects.

Protective influence. The protective influence of vaccination has been variously estimated both by the profession and the community at large. A greater difference of opinion has lately been manifested than formerly existed, owing to the increased number of cases of varioloid, which have recently occurred in individuals previously vaccinated. Whether this is referable to any deterioration of the matter from its long continued repetition in systems greatly contaminated with other morbid elements, or whether these cases are produced by the influence of epidemic constitutions of the atmosphere occurring in latter years more than formerly, is not readily determined. Another popular reason has been advanced to account for it, predicated upon the well known physiological law of change in the component elements of the constitution once in seven or eight years; it being supposed that as the whole system is entirely transformed and new matter replaced, a similar change is effected in the susceptibilities of the tissues.

When we observe, only here and there a case of varioloid or smallpox in whole communities, or a single case in a large family, where all are exposed during the prevalence of an epidemic favorable to the occurrence of smallpox, and in which the old and young and middle aged rely almost exclusively upon vaccination for their protection, can we for a moment doubt that the rule is that vaccination is protection, and the occurrence of varioloid the exception? When we see thousands of individuals living all their lives with entire impunity, and without any other protection than vaccination, although they are frequently exposed to the direct influence of smallpox in its most malignant form, can we entertain the suspicion that the protective influence ever wears out? Is it not more reasonable to suppose that, where the varioloid does occur in a system previously vaccinated, it is owing to an original deficiency in the extent of the vaccination, rather than to any influence the lapse of time may have had on the protective property of the prophylactic.

The protective influence of vaccination after exposure to smallpox in those who have not been previously protected, has been so frequently tested as to leave no doubt on the subject. The following case is particularly to the point. I was once called about ten o'clock in the morning to see a gentleman who had, about daylight, returned from Cincinnati, I found him in bed with his three small children. He was then approaching the stage of vesication of smallpox; in fact many of the pocks on his face were well filled. He was not aware, nor were his family suspicious, of the true disease, and he had frequently kissed his children, so that they were all as perfectly exposed as they well could be. I vaccinated them all during the day, and repeated it the next day, for the purpose of securing success if possible. The vaccination took in all, and proved a complete protection against the smallpox to which they had previously been exposed. But there is a question connected with the prophylactic influence of vaccination to smallpox that has not been fully settled. It is, how long after exposure to smallpox will vaccination prove successful in preventing the occurrence of variola? Apart from

cessful effect may be produced, and an imperfect protection afforded. The age of the person from whom matter is obtained is of but little moment, though a child pretty well developed most generally affords the most perfect vesicle. I have, therefore, preserved scales and matter from children from one to four years old more frequently than from others further advanced, or much younger. Beside, children of these ages have not usually as frequent opportunities of exposure to other skin affections as those that are older, and are therefore to be preferred.

It matters but little whether the dried scab of the vaccine vesicle be taken off on the fourteenth or fifteenth day, and afterward dissolved as it is needed for use, or whether a slight puncture is made in the vesicle at about the tenth day, and the matter preserved by charging a number of points made from quills, or by saturating a small thread with the fluid as it gradually exudes. In whichever way it is taken, it should in either case be protected from the air by keeping it in a closed phial, or by being placed between two pieces of ground glass with a small hollow ground into one of the pieces.

The *directions* I have heretofore given for the *mode* of performing the operation are, it is presumed, sufficient. I will only add that the left arm is usually preferred, probably, and only, so far as I am able to perceive, because the left hand is less used than the right; and the point preferred is about the insertion of the deltoid muscle, or midway between the elbow and the shoulder, on the anterior side. If the saturated thread is used, a small section of it should be gently pressed under the skin, into the puncture, made as before directed, and allowed to remain there. In any case, when the first operation is not successful it should be repeated from time to time, until the insusceptibility of the system is fully tested; and even then, when it has never taken, it should occasionally be tried to ascertain whether the system had not undergone some change. As the only known method of testing the genuineness of the first vaccination is either a second insertion, or exposure to the smallpox, the former is of course to be preferred, and should always be repeated shortly after the first has got well.

those cases even of smallpox, where the attack was light and uninfluenced by epidemic qualifications, as second attacks of smallpox do frequently occur under the circumstances I have supposed. When, therefore, I urge upon every one, not even excepting those who have had the smallpox in a moderate way, to be occasionally revaccinated, I would not be understood as expressing any doubt of the efficacy of vaccination when fully successful, or as implying any suspicion that its influence will wear out when the virus has been once completely infused through the system. If it has been previously successful no effect will be produced; but if it has not been protective in its influence, the revaccination will appear genuine in that degree that the susceptibility of the system still exists. The extent of the inflammation in these cases is not a true test of the quality of the vaccination, or the susceptibility of the system to the variolous influence. But the nearer the local character of the vaccine vesicle approaches an original and perfect one, and the more the general symptoms resemble those attendant upon the genuine cowpox, the greater the necessity for revaccination. In some cases a very considerable amount of inflammation will result from the insertion of the matter, and frequently great constitutional disturbance will be attendant, when the appearance of the vaccination will indicate a very imperfect pock. I have witnessed this in a number of instances, both in those who had been previously vaccinated and in those who had been inoculated.

The spurious cases will be known, also, by the more rapid development of the sore after the insertion of the matter; in these cases, the first slight impression that the puncture usually produces does not subside as in the genuine form of the disease, but gradually increases, so that by the fifth day, when a genuine vaccination would present a very small umbilicated vesicle, the spurious pock would show a large, diffused, inflamed swelling, with, perhaps, a purple center at the point of the insertion of the matter, and would be accompanied by feelings of general illness. Or for two or three days following the insertion of the matter, the irritation may increase with considerable itching, and then subside.

standing these extremes, it cannot be doubted that the different grades are essentially the same disease. The distinctions referred to are set down in the books as *scarlatina simplex*, *anginosa*, and *maligna*.

Symptoms. Frequently the first manifestation of disease in attacks of scarlet fever is severe vomiting and purging, associated with extreme paleness and prostration. This generally continues but a short time, when a quiet state of the system for an hour or two will develop a reaction with appearances of the characteristic eruption. But in other cases the ordinary feelings of languor and debility, with a loss of appetite, precede for a day or two the actual invasion, and are followed in time with pain in the head, back, and limbs, and with slight rigors, alternating with flashes of heat, until at length the accession of fever is complete, with a sore throat, and the commencement of the characteristic rash, associated with all the general symptoms of severe febrile disease—heat of skin, frequent pulse, and perhaps nausea and vomiting. There is also great restlessness, tossing from side to side, and throwing about of the limbs; and slight delirium and other nervous symptoms occur. In nervous children a severe convulsion often ushers in the commencement of an attack, followed by the nervous symptoms just mentioned; or perhaps stupor, almost amounting to coma, may supervene. Whether the difficulty of swallowing and soreness of throat precede the fever, or come on with it, enlargement and soreness of the tonsil glands are universal accompaniments of scarlet fever. The extent of this local difficulty varies in different cases; in some it constitutes the main complaint throughout the course of the disease, presenting, from the earliest stage, a highly inflamed, or congested and swollen state. I have seen it, upon the first examination, presenting a slough of the size of a quarter of a dollar. The swelling of the glands frequently increases until the decline of the fever, and gradually subsides with the fever at the usual stage for its decline. Often, however, the inflammation excited by the specific disease transcends its proper bounds, and develops a sympathetic fever, which continues until suppuration takes place, or is relieved

duce slight vesication in some of the angles of the limbs, which, upon the decline of the disease, may leave a crusted matter presenting the appearance of sores, sometimes degenerating into actual ulcers. In the early stage of the eruption, a burning or tingling sensation will frequently be felt over the body, which, as the disease declines, results in troublesome itching.

Whether the fever is developed a day or two before the characteristic eruption shows itself, or whether they appear simultaneously, they seem to progress and continue very much together, without any abatement, until about the fifth or sixth day, and sometimes a little longer, when they gradually decline, usually with distinct paroxysms of morning remissions and evening exacerbations, until they finally disappear, followed by a gradual return of all the healthy manifestations of the system. The pulse becomes slower, the thirst abates, the urine becomes more free and sedimentous, the appetite gradually returns, and finally the patient may be said to be in a convalescent condition. The tongue, which has been fiery red during the whole course of the disease, sometimes becoming dry and parched, now exhibits a red and glossy, but moist, appearance. The bowels are frequently loose during the whole progress of the case, often commencing, as the attacks do, with vomiting and purging. The irritation, thus begun, frequently keeps up until the disease subsides, and sometimes after the active symptoms have all disappeared, and the patient has become convalescent. Sometimes, however, the first onslaught of the disease develops inflammation in the peritoneal covering of the bowels, that not only arrests the diarrhea, but produces an obstinate state of constipation which may require active physic for its relief. The intensity of action in the capillary vessels destroys the vitality of the cuticle, and after the subsidence of the disease desquamation of the cuticle takes place over the entire body, generally in small scaly particles, though in parts of the system, especially in the palms of the hands and on the feet, it comes off in large pieces. This process is generally troublesome in nervous children, the itching being so severe as often

breathe through the nose, lies with the mouth open. In this condition, the tonsils and throat being stiff and swollen, deglutition becomes difficult, and in the effort to swallow a fluid it is violently regurgitated, and runs out of the mouth and nostrils. The voice is thick and muffled, and the articulation is often difficult and indistinct. The breath in these cases becomes exceedingly offensive, and, frequently, in the advanced stage, an offensive, acrid discharge issues from the nose, which scalds and irritates it, and extending to the lip and cheek, as the patient lies on the side, produces a similar effect. In this condition, too, a thick tenacious mucus is often secreted in the throat in large quantities, exciting a constant effort to clear the throat, and in some cases the irritation extends to the larynx, producing an irritating cough, which becomes a troublesome symptom, from the frequent and distressing efforts required to discharge the mucus thus formed. Diarrhea is a very common symptom in these more severe cases, and constitutes a grave feature of the disease. The embarrassment of the system from the oppressive influences just enumerated, renders this far more frequently fatal than the simple grade. This will answer for a description of the second variety, called *scarlatina anginosa*.

Other cases, again, present a still more malignant aspect, with a low state of the vital forces, frequently beginning with vomiting and purging, and the simultaneous appearance of the eruption in irregular, dark, or purple patches. A state of extreme prostration shortly supervenes, the pulse becomes so rapid as to be counted with difficulty, and is small and easily compressed; there is great loss of action in the capillary circulation, and it is not uncommon for the patient to become stupid and comatose, the extremities being cold, and the skin upon the body sometimes being cooler than natural, though more commonly above the natural temperature, and the head exceedingly hot. The eruption presents a purple appearance, and if the blood is pressed out of the capillary vessels it very slowly and imperfectly returns. These cases present more the character of extensive venous congestion of the whole system, with but little apparent obstruction in the

and, if there is not a total loss of hearing, a chronic discharge is set up which frequently lingers for years, is always troublesome, and very difficult to cure. Abscesses, also, in different parts of the body, but especially in the parotid and submaxillary, or some of the lymphatic glands of the neck, often follow in the direct train of the affection. But after all danger from the reflected inflammation is passed, and the patient is in a fair way to recover, it is no uncommon occurrence for anasarca swellings, and dropsical effusions into the cavities, to follow that state of general irritation, accompanying the acute disorder. The extensive irritation existing in the mucous membrane of the stomach and bowels, during the progress of scarlet fever, is frequently followed by the same difficulty in a chronic form, producing a troublesome diarrhea as one of the consequences of that disease.

Morbid anatomy. The anatomical relations of scarlet fever present little of special interest. In fact the pathology of all the contagious affections has received but little aid from the morbid developments observed after death. The truth is, the philosophy of disease has to be sought through some other channels than the old paths of morbid anatomy, and other instruments than the scalpel and forceps must be used to develop the mysteries of diseased action, before we shall arrive at any thing like the certainty that constitutes the essence of true science. The profession are beginning to direct their attention in the proper course, and if no other good has thus far resulted, at least the errors of the old system are becoming apparent, and a gleam of light upon what may be expected by the change begins to be seen. The importance of this course was seen and pointed out a number of years since by one of the most brilliant intellects that ever adorned the profession, and more important truths were taught by the same eminent professor (Magendie), than ever resulted from all the post mortem investigations put together.

In relation to scarlet fever I may say that the most rapid and fatal cases develop the least evidences of morbid action, thus showing that the lesion does not consist in organic disturbance, located in the parenchyma of the solid tissues, but

able to ascertain all the circumstances connected with the origin of those cases supposed to be spontaneous. We must, therefore, defer the determination of this question to future research and observation.

Whatever may be the direct origin of the disease, it will not be doubted that epidemic influences are more frequently operative in the prevalence of scarlet fever than in most other contagious affections, if not of any other disease whatever. It is rarely a widespread epidemic, like the cholera or influenza, affecting whole countries, or the whole world, by successive movements, but is most generally limited to single districts or towns. We cannot suppose that epidemic influence is sufficient to produce the disease without the specific cause to develop it, but we frequently find the epidemic character of the prevailing disease to be greatly in consonance with the specific one. Thus, in epidemic scarlet fevers, most of the community suffer more or less with sore throats, not having, however, the character of the contagion of scarlet fever. So of measles. An epidemic influenza, simulating the disease in every thing but the characteristic symptoms of measles, frequently occurs in connection with that contagious disease, affecting more or less those that are protected, as well as those who are not. We must not, therefore, confound the epidemic attachment of any contagious affection with the contagious disease itself.

Scarlet fever attacks indiscriminately all ages and both sexes, though it is more commonly met with in children—adults being generally protected by previous attacks. But it appears to be less general in its attacks than most other contagious diseases, as a large portion of community never have the disease. In this it often presents a most singular character, frequently affecting a single member of a large family, while all the rest escape, though, generally, most of the other members feel the influence of the poison to some extent. It may occur at any season of the year, but most frequently prevails during the cold and variable seasons of winter and spring: this is more especially the case with an epidemic attachment.

erythema affecting the whole surface would be more likely to be called scarlet fever than any other disease I have ever seen. But the complete and diffuse redness of the surface, instead of that finely dotted appearance in scarlet fever, will enable you to make the distinction. Besides, in erythema, the anginose symptoms are wanting that are always present in scarlatina. From measles it will be distinguished by the irregular distinct eruption, generally of a higher color, and the more prominent catarrhal symptoms in measles than in scarlet fever.

Prognosis. With appropriate treatment scarlet fever should in most cases terminate favorably; yet there are few diseases in which the careful physician will feel less certain of the result of every case, than this. The sudden and often unexpected changes from the mildest to the most malignant, and from the severest to very moderate cases, must necessarily produce a feeling of trepidation that will not justify an unqualified prognostication in any case. But, generally, our prognosis may be predicated upon the violence of the attack; so that while scarcely one case in a thousand, in its mildest form, should prove fatal, a large proportion of the most malignant cases have thus terminated with any mode of treatment heretofore known. Most cases of the anginose form of the disease, if promptly and properly treated, will recover; but if allowed to progress till extensive congestion has taken place, and the vital forces have become greatly benumbed by the accumulated poison, this form of the disease will be likely to have an unfavorable result. The prognosis, then, in ordinary cases of scarlet fever will depend upon the violence of the attack, the course of treatment that is pursued, and the stage of the disease when you are called. These qualifications apply equally to all complications, though the various conditions of the system, and the connection with other morbid processes, will greatly influence the result of scarlet fever. Thus, during pregnancy, a severe attack would be more likely to prove fatal than under other circumstances. Some females seem to possess a singular aptitude to the affection, while others, again, are never affected. So in regard

of the specific poison, by the timely administration of the remedies and the use of the means, which experience has taught us tend to relieve these conditions in the different organs and parts referred to. We may in this way prevent serious local complications, or remove them when they occur.

. But do we possess any remedy which experience has taught us has a counteracting or neutralizing influence upon the specific poison in its action upon the system? I am honestly inclined to answer this interrogatory in the affirmative. If severe attacks of the disease are seen, time after time, gradually to yield in the violence of their symptoms, and in a much shorter space of time than all experience has shown is the natural tendency of the disease, where it has no untoward complications, and if patients recover without any other treatment that could account for the result, we must yield it our confidence until further experience shall explain the facts, and show the fallacy of the conclusion. Some ten years ago I learned, from some authority which I thought entitled to high consideration, that belladonna when administered in appropriate doses did with great uniformity exercise control over scarlet fever. I accordingly determined to try it upon the first opportunity that offered; and I did so in all the cases, amounting to a hundred or more, that came within the range of my experience for the next four or five years, and among which a number occurred of a very severe and unpromising character. Attacks, commencing with vomiting, and accompanied or soon followed by the eruption, a rapid swelling of the tonsil glands, hard and labored breathing, and with either extreme restlessness or great stupor, were so far relieved in twenty-four hours as to present the mildest symptoms of the most simple variety, and in the next twenty-four hours the eruption faded away, the disease of the throat subsided, and every symptom of the disease disappeared. Among the cases treated were quite a number of this kind, while the less severe went through in about the same period without any complications or local disease following.

. But I must not mislead you. You must have my whole experience, and thus be able to form, in some measure, a

of years and in the treatment of hundreds of cases, did prove generally successful. But if the belladonna should be found, as I cannot but think it will be, a valuable article in the treatment of this affection, to the extent, at least, of counteracting the specific poison wholly or in part, then it may be used while the other measures, which I am about to describe, are being administered for the purpose of fulfilling other indications in the case.

I have already given sufficiently full directions in regard to the treatment of the mild and uncomplicated modifications of scarlet fever. In the anginose form, if there are no complications that require corresponding remedies, and the stomach does not show particular evidences of accumulations, the bowels should be gently evacuated by an injection; or if accumulations are discovered in them, a small dose of pure salad oil, or, if you can procure it, East India castor oil, may be given. If neither the stomach nor bowels require to be evacuated, as in many cases they will not, and if the disease is progressing without any untoward symptoms, it should be allowed to do so without the interference of medicine; though a towel, wrung out of cold water, may be applied to the throat, and changed once in three or four hours, or so as to keep it moist and cool. But in severe cases where the tonsil glands are greatly swollen, and the difficulty of swallowing is increasing, an infusion* of our emetic powder should be given and repeated until free vomiting takes place. The emetic should be repeated whenever the existing symptoms indicate a filling up of the throat. Meantime if the throat, upon examination, exhibits a dark or purple appearance, it should be gargled once in three or four hours, with a decoction of half a drachm of cayenne pepper and a drachm of common salt in a teacupful each of vinegar and water, or if it cannot be gargled a swab may be used. Between the times

* R. Ipecacuanha, Lobelia, aa 3ss.

Cap. an. gr x. Mix.

Steep in half a pint of hot water and strain.

To a child give a dessertspoonful every ten or fifteen minutes.

exhibit a dark and purple appearance, to relieve which you will find no means so prompt and reliable as rubbing them with dry mustard and wrapping them up in hot flannel. In fact I have witnessed the most beneficial effects from rubbing the whole surface freely with the dry mustard, and repeating it as often as may be necessary to restore action to the lost capillary circulation, which will be indicated by the change in the color of the eruption from a dark purple to a bright florid; and by a more natural warmth in the extremities. After the symptoms of congestion are relieved, and the circulation has become more full and regular, the stimulant should be suspended, and the patient allowed to take the marsh mallows and ice as before directed; and if the skin should become hot and dry it may be freely sponged either with cold water, or warm whisky and water, as may seem most congenial to the patient, or beneficial to the case.

I have occasionally found scarlet fever complicated with worms, which not only embarrassed the case, but prevented the operation of the emetic in a number of instances. These cases I have been accustomed to treat the same as for worms and always with good effect. (See Worms.) But there is another complication that I have so often met with in this western country, that I should be doing both you and the subject great injustice if I failed to mention it. I refer to the periodical complication, and I cannot, perhaps, more clearly present the views I desire to inculcate than by relating the case of a patient I was once called to see, and for whom I prescribed. The patient was a girl some six years old, and had been sick eight days when I was called to see her. I found both ears discharging, and her hearing so completely impaired that she could not be made to hear the loudest conversation; in fact she was perfectly deaf so far as I was able to determine. One of her eyes had an ulcer involving the whole cornea, and its vision was irretrievably gone, while the other eye was so much inflamed as to involve not only the eye and lids, but the whole cheek. And thus with the most certain prospect, as I then thought, of being entirely deaf, with an equal chance of losing the remaining eye, and thus

membranes, produced by scarlet fever, render convalescence from an attack of that disease always fraught with great risks of serious difficulty. Hence not only exposure to cold or to sudden changes of temperature, but also indiscretion in eating, often produce disorders little less dangerous than the original affection. In fact the *sequelæ* of scarlet fever often prove fatal. The system may be so much reduced as to require mild tonics, though the existing irritation in the mucous membrane of the stomach and bowels generally precludes the use of direct stimulants. Mild, unirritating tonics can, however, usually be borne. The infusion of staphylea, or wild cherry bark, will be found among the most valuable for such cases, and may be taken in wineglassful doses three times a day. The diet in all these cases must be, for some time, very light and easily digestible. Very little if any meat, but rice, farina, stale bread, and other articles of a similar kind, should be prescribed.

Various difficulties may follow from scarlet fever, either as direct consequences of the disease, or as indirectly resulting from the condition in which the organs are left by the disease, and subsequently acted on by other exciting causes; each of which will require to be appropriately treated.

Much has been said at different times of the *prophylactic* influence of different measures for the prevention of scarlet fever when it is prevailing. Among the remedies which have been specially recommended, none have been more confidently urged upon the profession, by some who claim to have used it, than belladonna. Its value in this respect is variously estimated, though, whatever may have been the experience of individual practitioners, it has not received the sanction of authors generally. It is, however, one of those questions that is difficult to determine. I have myself frequently prescribed it, and though general exemption from attacks of the disease has been the result, yet single attacks of scarlet fever are so common in large families, where all are exposed without the use of any means particularly intended to prevent its occurrence, as to render such experiments not very satisfactory. Other measures have been tried, but I have had no personal experience with them.

that of other disorders of this class, and may be considered to be about two weeks, at which time a slight dry cough begins to be observed, without any other symptom. I do not feel justified, from the observations I have been able to make, in concurring with the statement made by the books, that hooping cough commences with the ordinary symptoms of a cold,—“coryza, sneezing, and slight injection of the conjunctiva.” When it occurs simultaneously with an epidemic influenza, the early symptoms will be such as characterize colds; or if the patient happens to contract a cold at the period for the first development of this affection, the commencement of hooping cough will be the “ordinary symptoms of simple catarrh.” But in its uncomplicated character it has not been observed by me to commence with the symptoms referred to, and this accords with the local manifestation of the disease. We certainly are not in the habit of looking to the nasal cavity, nor to the conjunctiva, for the location of the specific disease, nor is the disease of those parts a necessary complication with the affection.

The cough when first observed is dry and hacking, and increases in the same way without any peculiarity that can be noticed. In fact it is not for a week or more that any paroxysmal recurrences or spasmodic manifestations, characteristic of the cough, will be observed. But at length the cough manifests an unusual tendency to return at stated periods, or rather at distinctly irregular periods, and when thus recurring, exhibits far greater severity than is usual to common colds. At this stage a slight general disturbance will be manifest; greater irritability, and some drowsiness or dullness will be noticed, and if the case is examined, some excitement of the pulse, and frequently more than ordinary warmth of skin, will be felt. With these symptoms the characteristic cough will generally take place, though it is not perceived at every paroxysm. The transition is so gradual, and the increase of the cough is so imperceptible from day to day, as scarcely to be observed, and the peculiar hooping sound of the cough sometimes continues for several days without any suspicion of the true difficulty. This period of the disease

tinues for a number of minutes, so that the patient is very much exhausted. But it is a mere temporary debility, the patient in a short time resuming his plays or other engagements with ordinary sprightliness. If it occurs in the night the patient is scarcely roused to a complete state of consciousness, and the moment it is over drops down into a sound sleep.

Thus the disease progresses, gradually increasing in the severity of the paroxysm, frequently with an aggravation of all the attendant symptoms till about the sixth week, when it will gradually subside, and if no untoward circumstances occur, and the child does not take cold, at the expiration of six weeks more the disease will have disappeared. It may therefore be said to occupy about three months from its first manifestation to its entire decline; nor can it even then be said to have lost its influence upon the system, as it often recurs for two months or more longer, with its characteristic paroxysmal symptoms, upon taking cold.

The course and symptoms I have described relate to ordinary and average cases of well developed hooping cough; but it will often present great variety in these respects, sometimes appearing in a much milder form with scarcely any symptoms more severe than a common cold, and in fact sometimes the only especial evidence of the disease is its protracted character. But in other cases the symptoms are far more severe and the paroxysms more frequent. The eyes often become bloodshot, and a dark sanguineous effusion takes place under the eyes, and it is said that hemorrhage from the ears occasionally, and from the nose very often, occurs during the progress of a case. In some instances the urinary secretion is discharged at every fit of coughing, and a discharge from the bowels occurs at the same time. In some cases the paroxysm is so protracted and severe that the child presents a purple appearance, and in one instance in my experience the hacking expiratory act was so long and the system so completely prostrated, that the accumulated carbonaceous matter in the blood paralyzed the nervous system so as to prevent the inspiratory effort, and the child died in a state of perfect

thereby allowing the escape of air into the inter-vesicular cellular substance of the lungs, and thus producing emphysema that may ultimately be found a troublesome difficulty to manage.

Diagnosis. The diagnosis of whooping cough is only difficult at that stage of the disease before the development of its characteristic cough and hoop. And fortunately there are no circumstances directly connected with the welfare of the case that render a determination of the question of any special moment. It may, however, be important in some cases, as connected with the movements or business arrangements of interested persons, to settle the question at an early stage. But all that can be said on the subject is that we must rely on the whole phenomena of the case. We have no specialties to refer to, and no one circumstance that might not readily be explained in connection with other diseases. The slow progressive increase of the cough without evidences of "cold," the absence of general or local symptoms to account for it, the general previous good health of the patient, and especially the previous exemption from cough, all taken together, will give an aspect to the case that may in some measure be relied on. It must be confessed, however, that these circumstances may all fail to afford a correct index to the case, and totally disappoint our diagnosis.

Prognosis. Although a lingering disease, and often a severe and distressing one, whooping cough rarely proves fatal. But it does occasionally have an unfavorable termination, not only from the lingering complications that frequently follow in its train, but also, occasionally, from its direct influence upon the system. Both of these cases, however, are rare, and from their peculiarity in this and other respects, can neither be foreseen nor well guarded against. We must, therefore, put such cases among the casualties of life over which science has but little control. The more important the organ involved and the greater the gravity of the attack, the greater is the liability to prove fatal. The condition of the general system, also, has much influence, not only in conducing to local determination, but also in the probable termination of the case.

effects of this remedy, in all stages of the affection prior to the stage of decline,—when its use would scarcely be advisable,—that the only inquiry I have of late years been in the habit of making, is whether it is a clear case of whooping cough, and is free from other serious complications. I am fully convinced that, if the remedy has failed in the hands of other physicians, it has been owing either to the use of a spurious preparation of the drug, or to its improper administration. The apparent effects of the medicine upon the system suggested its incompatibility with much febrile action, and I have accordingly first made use of appropriate means to remove the fever, when found to exist, at least in a measure, before commencing with the belladonna. And here permit me to remark that a large portion of the extract of belladonna sold in the shops is of an inferior quality, and not at all reliable in this affection. I have, in several instances, had occasion fully to test the correctness of this statement. I have found the best alcoholic extract generally reliable, and hence have lately always procured that preparation. Another important consideration in regard to its curative influence is, that the specific effects of the medicine must be realized every day while it is being administered.

I have generally used the following formula:

R Alcohol. ext. belladonna, ʒi.
Water, ʒiiss.
Ret. spt. ʒi. Mix.

This I commence in doses of twenty drops to a child two years old. But before directing the particular mode of its administration, I will remark that its effects upon the system, when administered to the extent of its specific action, are to enlarge the pupils of the eyes, and generally produce a distinct flush upon the skin, or at least upon the face and neck, resembling scarlet fever. The pure and reliable preparation has always, in my hands, produced both of these appearances, making the patient at the same time dull and sleepy. These effects are not imaginary, for I have witnessed them in some hundreds of cases. The enlargement of the pupil is considered its pathogenetic effect, though with me the two phenom-

again the next morning. The dose on the next morning should be the same in quantity as the last one on the day previous. In this way you will obtain the point of toleration with entire safety, and when the amount necessary to affect the system is ascertained, it must be given but once a day; though its effects should still be looked after, and if the dose first found sufficient does not continue so, increase it; or if its action prove rather too much, diminish it.

The time required for the medicine to be continued before the disease is broken up varies somewhat in different cases. The shortest time I have ever known was three days, when the cough was so far arrested that it was not thought necessary to continue it. This was in the case of two sisters, whose cough was almost entirely checked at the expiration of three days. But the time varies from three to fourteen days; eight or ten days, perhaps, being an average. Its administration should be regular and continuous. The first two or three days no effect upon the cough is generally observable, but by the third or fourth day the paroxysms will occur less frequently, and by the next day will be neither so frequent nor so severe, and thus will gradually disappear, though rapidly after the first impression.

It has been suggested that so sudden an interruption of the cough might interfere with its protective influence upon the system, and thus barely put off the evil day. My attention was called to this subject at an early period in my experience with it, and I have not yet known an individual to have the disease a second time who had been previously treated with belladonna. The two little girls, before mentioned, who took it only three days; are now young ladies, and though exposed a number of times have never since had the disease. When the paroxysms are light and short, and the child does not seem to mind it, but is playful as usual, the inconvenience of administering the medicine might be greater than that of the disease itself. In such cases my usual course has been, especially in the summer time, to let them alone.

If the belladonna should not prove, in the hands of others, as it has in mine, a reliable and effective remedy, the old

will be found an excellent remedy, given, however, in rather less doses than for the other purpose.

Various other remedies have been recommended, and perhaps some of them possess some palliative properties, though, so far as I have observed, those that I have referred to have been found to possess all the palliative influences claimed for others. Hydrocyanic acid and strychnine, in suitable doses, have been used, but as I have had no experience with them in this affection I refer you to the books. Alum has been highly recommended in severe cases of whooping cough, and indeed some authors seem to think it has advantages in this disease as a palliative, almost amounting to a curative, that few if any remedies possess. Dr. Meigs speaks of it in terms of praise that entitle it to a favorable consideration. I have seen it used in a few cases with some benefit, but not with the marked advantage resulting from the lobelia and the neutralizing medicine. The alum is given in doses of from a half to two grains, according to the age of the patient. For very nervous children, an infusion of assafetida will be found a very valuable antispasmodic and sedative, and may be given in teaspoonful doses every two or three hours.

The complications that may occasionally occur will require the usual treatment, with such modifications as the condition of the system may indicate to be proper for those affections. For inflammation of the lungs, which is perhaps the most serious concomitant of whooping cough, cupping should be resorted to, and the internal use of such other remedies as may be thought most appropriate, among which are occasional moderate lobelia emetics, and the frequent use of sanguinaria syrup as a sedative and expectorant. After these, the whole anterior portion of the chest should be covered with a folded towel wrung out of cold water, and changed often enough to keep it moist. I have known this in a number of cases to have a most excellent effect.

It often becomes necessary in the advanced stage of the disease to make use of mild tonics and restoratives. Of these an infusion of wild cherry is one of the best, and the decoction of peach leaves or bark possesses similar properties.

LECTURE LXXVIII.

CONTAGIONS—CONTINUED.

RUBEOLA OR MEASLES—*Premonitory symptoms—General symptoms—Eruption—Diversities—Anatomical relations—Cause—Diagnosis—Prognosis—Treatment.* **PAROTITIS OR MUMPS—***Symptoms—Metastasis—Treatment.* **VARICELLA OR CHICKENPOX—***Symptoms—Cause—Diagnosis—Treatment.*

RUBEOLA OR MEASLES.

Measles has been long known, indeed has been correctly described by writers upon medicine for the last thousand years. It is one of the eruptive contagious affections, characterized by prominent catarrhal symptoms, accompanied by fever, and about the fourth day of the attack the peculiar eruption upon the skin appears, but without any abatement of the fever or other symptoms.

The *early* or *premonitory symptoms* do not differ from those of many other acute diseases, and we therefore cannot foretell the character of the impending disease until its more characteristic manifestations are developed. A sense of weakness or lassitude, with alternating chills and flashes of heat, aching in the limbs, headache, etc., which are soon followed by an excited pulse, and more permanent accession of febrile symptoms, such as heat and dry skin, loss of appetite and furred tongue, are essentially the ordinary symptoms of common febrile affections. But when to these are shortly superadded suffused eyes, occasional sneezing, discharges from the nose, with hoarseness, sore throat, inflamed fauces, and presently a harsh tearing cough, we may then begin to suspect an attack of measles. In some instances when there is great fullness in the head and nose, hemorrhage from the nose

fourth morning the general symptoms begin slightly to abate; the eruption that was first shown upon the face begins to fade, and thus it goes on gradually declining in the parts on which it was first manifest, thickening on the last points where it was seen, and still extending farther, until, on about the tenth day of the disease, or the sixth of the eruption, it has greatly faded, and the general symptoms have mainly disappeared.

The *character of the eruption* is peculiar and requires to be seen to be correctly appreciated. At first it presents mere points of red without any prominence, which very shortly appear to coalesce, and change from mere points to an irregular and diffuse redness in sprays, of the size of half a dime, sometimes less or larger, with intervening spots of a nearly healthy or natural appearance. The eruptions will disappear under pressure, and feel slightly raised or rough. These are the general appearances, as well as I can describe them, but varying in different cases. In some the eruption is of a brighter red, while in others it presents a more purple hue; in some, very small spaces only of unoccupied skin will be found between the eruptions, presenting the appearance of nearly one continuous erythema, while in others the irregular flat eruption will be in more distinct patches; the prominence of the eruption also varies in different cases. The fauces, if examined, will present the same irregular patches of redness that are shown on the skin, and the tongue, which was thickly coated, begins to exhibit the projecting papillæ, especially on the back part, which gradually increase till the whole tongue seems occupied by one continuous redness. The fever begins to decline on the third or fourth day, as the eruption on the face begins to fade, and thus they gradually and simultaneously disappear. The cough, too, that had become more severe and troublesome as the eruption increased, begins to be more moist, and a more free and a thicker expectoration is observed as the fever and eruption subside. But in some cases, as the eruption disappears, the cough becomes tighter, the respiration more oppressed, and there is every symptom that an attack of inflammation of the mucous membrane of the bronchial tubes, or air cells of the lungs, is

natural progress of the case; and in the same way one or more of the several stages may be disturbed, though the case may ultimately recover; or it may so far interrupt the natural course of the disease as to convert it during its progress, or after the period for its decline has expired, into another and different disorder.

It is these modifying influences that so change the natural features of the disease as to have suggested the doctrine of varieties of the disease, though I believe few, if any, respectable authors recognize the distinction beyond what is produced by the causes referred to. The terms *black* measles, and, in some places, *French* measles, have originated in this way. There is no doubt that the conditions of the system have similar modifying influences that may tend to produce somewhat similar complications, and thereby change in a considerable degree the natural course of the disease. The most common complication of measles is inflammation of the lungs and bronchial tubes, often terminating in consumption, especially in grown persons. Chronic ophthalmia often results from the inflammation of the eyes attendant upon the measles. Laryngitis is sometimes developed during the progress of measles; in this case the complication is a severe one, and likely to have an unfavorable termination. It is said by some authors that measles sometimes occurs simultaneously with scarlatina and smallpox, and the two affections run their course together. I must acknowledge it would present an interesting medley not common to such affections, and exceedingly difficult to reconcile with our present mode of philosophizing on those diseases. The revolution which a severe attack of measles must necessarily produce in the condition of the system, renders its influence upon some of the chronic diseases apparent and easily appreciated. Thus certain obstinate chronic cutaneous affections have been entirely removed, and never returned after an attack of measles.

The *anatomical relations* of measles have very little of an interesting character. Uncomplicated attacks of the disease so rarely prove fatal that opportunities seldom occur for such investigations. And where death results from other causes

been known to attack the youngest child, even before birth, and persons just tottering to the grave. Its protective influence from subsequent attacks is an admitted fact, and considered a very general and reliable rule; yet it frequently varies from this rule. I have attended several patients who had two well defined and unmistakable attacks of measles. Which of the contagious affections is least liable to recurrences of the kind it is not generally agreed. The latent period of measles, or the time that elapses from the exposure to the cause, until the manifestation of the first symptoms, of the disease, is generally agreed to be about a week.

Diagnosis. When the eruption is out, the experienced physician will have no difficulty in determining the disease. But during the initial fever, it is somewhat presumptive for any one to decide positively that it is an attack of measles. Still, even then the general prevalence of the disease would make it safe to pronounce a case one of measles, more especially if it was known that there had been an exposure, and that sufficient time had elapsed for the appearance of the symptoms. Those who are not familiar with the characteristics of some others of the eruptive diseases, might mistake measles for the early stage of smallpox and perhaps scarlet fever, while those who are familiar with all the eruptive diseases will have no difficulty in distinguishing between them. In the early stage of a severe case of smallpox the eruption and, in some respects, the initial fever resemble those of measles. The sore throat, suffused eyes and cough, that often attend smallpox might be mistaken for measles, and *vice versa*. The fever, also, is similar; but the severe pain in the back in smallpox, not common to measles, the more marked symptoms of coryza in measles, not so prominent in smallpox, and the harder and more prominent *feel* of the eruption in smallpox, if they are all properly considered, will render it comparatively easy to distinguish the affections, even in their earliest stages. While in the latter stages no difficulty whatever can exist, as the vesicles and umbilicated eruption peculiar to smallpox leaves no room to doubt. It is easy for the careful observer to distinguish measles from scarlet fever; in the latter

and then suspended, unless the eruption shows a tendency to recede, when I should repeat as before. I have also frequently administered the hot whisky toddy in severe congestive attacks, in which the eruption was inclined to assume a dark color, and I have seen the eruptions in such cases assume a bright or florid appearance under its use. But I would not be understood as recommending this practice indiscriminately in all cases, but only in the condition of the system I have supposed. In those cases where the eruption has the proper appearance, and the complications present inflammatory symptoms, it should not be used. Only in a comparatively limited number of cases, therefore, will its use be proper.

For the troublesome and irritating cough that so generally accompanies, and frequently follows measles, a valuable remedy is a syrup prepared from a decoction of eupatorium (boneset) thickened with loaf sugar, and given to children in from half to a teaspoonful at a time, according to the age of the child, every half hour, or more or less frequently as the cough may seem to require. But this will not be sufficient for some cases. For such, the red drops and salad oil, rubbed up with loaf sugar, in the proportion of fifteen or twenty drops of the former to a teaspoonful of the latter, may be given to a child a year; or a year and a half old, and repeated two or three times a day; it will rarely fail to afford the desired relief.

When there are clear evidences of pneumonia, the lungs should be examined with care, and the precise seat of the local determination ascertained; then a cup or two should be applied, and followed by hop fomentations as warm as the patient can bear them, and changed every half hour, care should be taken, in changing the applications, not to expose the patient so as to produce a retrocession of the eruption. Wherever the local determination, a somewhat similar course should be pursued, being governed by the circumstances of the case. Should evidences of laryngeal disease manifest themselves, a cup should be immediately applied to each side of the larynx, followed by a soft onion poultice; at the same time the acetous tincture of sanguinaria should be given in

when the stomach is irritable. If a troublesome bronchial irritation should follow measles, our pulmonary balsam and the common cough drops may be taken, as the urgency of the case seems to require. These cases will generally have to be treated with tonics, exercise in the open air, copious bathing, and the use of plain but nourishing food.

PAROTITIS, OR MUMPS—CYNANCHE PAROTIDÆA.

The conventional term, Mumps, is the least exceptionable to designate the *specific contagious disease affecting the parotid gland*, as it does not literally express or suggest any thing connected with the disease except the manifestation of dullness usual to it, and the meaning is well understood both in the profession and out of it, while the other terms, taken strictly, convey an erroneous notion.

Symptoms. This disease, like the other contagious affections, is amenable to the laws of regularity in its stages of rise, progress, and decline, requiring about two days for its full development, and continuing for about two more, when it begins to decline, and entirely or mainly disappears at the end of a week from its commencement. It is located in the parotid gland at the angle of the jaw, directly in front and below the external meatus of the ear, and commences with a slight stiffness in moving the jaw. The swelling progresses rapidly to its full development, rendering it somewhat difficult to open the mouth, and sometimes involving the act of swallowing in some difficulty and pain. In persons subject to earache it is very liable to excite that difficulty, and produce great suffering. It is sometimes confined to one gland, but most commonly affects both at the same time, though in some instances the contagion affects one gland first, and is afterward propagated to the other in due time for the lapse of the latent period. It thus not only manifests the usual character of contagion, but shows that the specific influence is confined to these particular glands, and does not originate in the general system; otherwise the first infection should involve both glands at the same time.

Mumps can scarcely be said to be an inflammatory disease,

in most others of the class, as second attacks are not so frequent as in the others.

Treatment. Unless there is some unusual severity, and except in cases of metastasis, no treatment will generally be required. If, however, the local and general symptoms are more severe than common, a light physic, abstinence from eating and from exposure of the parts, and a flannel bandage over the swelling, are all the measures that will be required. It may be desirable in some severe attacks to administer a pretty active cathartic, when the tongue is thickly coated and the bowels costive. In that case the antibilious physic and cream of tartar may be given in drachm doses each, and repeated if necessary. Or if a less active and more cooling cathartic is required, a dose or two of seidlitz powders may be given.

But the main point connected with the treatment of mumps is to understand the proper management of the translated form of the affection. This is readily done. If the disease has been transferred to the testicles, the patient must be kept entirely quiet, and a suspensory bandage so adjusted as to prevent the weight of the testicle from straining the cord. Or if the patient is in bed, as it is best he should be for a few days, by placing the limbs close together, the testicle can be so arranged as to take off the weight, and also be in a more convenient position for the applications suited to the case. I have tried various local applications for these cases, but find none to afford anything like the immediate relief which I have always derived from the application of the hot hop fomentations frequently changed. They will rarely fail to afford immediate relief to the pain and suffering, and be followed by a gradual decline of the swelling. They should be applied as hot as they can be borne, and changed once an hour. I have also generally directed the simultaneous application of a mustard poultice to the original seat of the affection, with the ostensible view at least of inviting back the disease to its former place. Nevertheless I have much doubt whether it has any special beneficial effect, as I have never witnessed any evidence of the return of the disease. With these local

the back their true character will not fail to be observed. You will generally find the eruption in all the stages, from a slight red pimple to a dried scab, evidently having appeared in successive crops. They rarely present the mahogany color characteristic of variola when maturing, but generally exhibit a more yellow or lighter color, like other common eruptions, and on the fourth or fifth day the eruption presents a light pearly appearance, and gradually dries until the eighth or ninth day, when it generally falls off, leaving the surface a light red color, though not cicatrized. In some instances, when the system is considerably out of order, and when the patient has fretted the eruption by scratching, sores of considerable size may follow, and in this event a pit of a rounded shape may be left, which will continue through life.

Cause. Although the attempt to propagate chickenpox by inoculation has rarely been successful, I am not aware that any respectable author doubts its contagious character. But it is so mild and harmless a disease, that it has made but little stir, and is not much dreaded. It is no doubt frequently influenced in its prevalence and character by epidemics. Like the other contagious affections, varicella is governed by the general laws of regular stages and decline, as well as in its protective influence against subsequent attacks. It has no known prophylactic, and is generally confined to children.

Its resemblance to variola, in some respects, for a long time led to its being confounded with that affection, though it was believed to be a very mild form of it. But when it was found to differ essentially from genuine smallpox in its character; that it afforded no protection against the latter, did not in the least prevent the successful effect of vaccination, and that neither of the latter diseases prevented the occurrence of chickenpox, it was at length determined that they were two distinct diseases. But when the varioloid became better known, though before its true character was determined, and its proper place in the rank of disease pointed out, varicella was for a time believed to be allied to it. But it is now determined to be a *sui generis* affection, having its own cause,

LECTURE LXXIX.

ERUPTIVE OR CUTANEOUS DISEASES.

General remarks. VESICULAR DISEASES—*Species.* HERPES—*Characteristic symptoms—Varieties—Causes—Treatment.* ECZEMA—*Varieties described—Cause—Treatment.* SCABIES OR ITCH—*Nature and symptoms—Cause—Treatment.* BULLÆ—*Two modifications.* PEMPHIGUS—*Description—Treatment.* RUPIA—*Description—Causes—Treatment.* PUSTULÆ—*Varieties.* IMPETIGO OR MOIST TETTER—*Character—Causes—Treatment.* PORRIGO OR SCALD-HEAD—*Description—Causes—Nature—Treatment.* EXANTHEMATA—*Varieties.* ERYTHEMA—*Description—Diagnosis—Causes—Treatment.*

In considering the skin diseases, I do not propose to go into a minute description of every variety of these affections as discussed in the general authorities, but shall content myself by presenting some of the most common and prominent of the several groups or genera of this class, as comprehending all that can be discussed on the present occasion with any practical utility. I am the better satisfied with this course since the character of the several varieties will be very well understood from the individual diseases I shall consider, and especially as the course of treatment necessary and proper for the individual cases will generally be applicable to the others, with a few exceptions. But I must be permitted to say that, with all the investigations that have been made in this class of diseases by very learned authors, but little of a very satisfactory nature, in a practical point of view, has yet been learned. It is true the history and symptoms of the various cutaneous affections have been carefully studied and described; but when their true nature and character are

continues a short time, and then disappears ; while in others it is clearly a constitutional disease, not only returning every season upon the return of cold weather, but being transmitted to descendants for a number of generations. The books describe a number of varieties of herpetic eruptions, differing mainly in the form of the conglomerations and location of the eruption. Thus the *herpes circinatus* or ringworm, the *herpes iris* or rainbow ringworm, *herpes zoster* or shingles, and the *herpes phlyctænodes*, differ but little in their essential character, except in the extent of constitutional derangement, which is greater in some cases than others. It can scarcely be doubted that herpes, whether it occurs in the form of a ringworm, or in a more general form appearing at no particular place, but changing from one part to another, is a constitutional disease.

Herpes zoster, or shingles, is the most severe form, being generally accompanied by more acute symptoms of constitutional derangement and general disturbance, such as furred tongue, deranged secretions, generally some fever, preceded by chills and often accompanied by severe local pain of a deep seated, neuralgic character, and a severe burning and smarting sensation on the surface. The eruption occurs generally on the chest, and frequently extends in a narrow ring round the body, which tradition considers very ominous of a fatal termination, an opinion which has nothing but traditional error to support it. It begins generally with a very red patch, but soon becomes covered with transparent vesicles, and then pursues the course previously described. Herpes is liable to be confounded only with some modification of eczema, but the distinction will be readily determined, upon very little experience. The vesicles in herpes are generally larger and more round, at first very minute, but gradually increasing, and continuing for some time ; while in eczema the vesicles are smaller, seldom last but a few days, and have not so distinct an inflamed base.

Causes. Very little can be said in regard to the cause of this form of eruptive disease, more than has already been intimated. Various influences contribute to develop herpetic

crust. There are a number of modifications of this eruption, but in many respects they might be considered as one disease, and no doubt they are dependent on a similar condition of the system. The three leading varieties are *eczema simplex*, or prickly heat, *eczema rubrum*, and *eczema impetiginoides*.

The first or *simple* variety is that eruption on the skin, most common to children, but frequently occurring in fleshy adults, during the warm weather of summer. This variety does not always vesicate to any great extent, though in some instances it commences like prickly heat, shortly assumes a more distinct vesicular character, and then dries. The second variety, or *eczema rubrum*, presents a more distinct vesicular character, surrounded by a more distinctly defined "red base," with an inflamed skin, presenting a rough and sometimes swollen aspect. This form is accompanied by a sense of itching, and after the vesicle dries and scales off, the skin presents an inflamed appearance, which is followed by a new set of vesicles, which in their turn dry and desquamate; or, after the first scaling off, it may get well. The third variety, or *eczema impetiginoides*, is simply a more aggravated and severe form of the last, with greater swelling, heat, and itching, more numerous and enlarged vesicles, forming more thick and dense scales, and in some instances presenting interspersed pustulous eruptions. In the desquamation, too, it presents a severer character, leaving the skin in a raw and inflamed condition, and followed by a new crop of pustules, which in their turn desiccate and fall off; and thus it continues if it does not get well. This form is usually circumscribed in its extent, sometimes being confined to one cheek or the head, though it generally shows itself in patches over different parts of the body. It is no unusual occurrence for extensive attacks of this kind to be accompanied by constitutional disturbance, fever, and restlessness. The three modifications will often be witnessed in this more severe modification, thus most conclusively showing their identity. This is often exemplified by the milk-crust, or scald-head, as it is sometimes called, of nursing children. On one cheek the eruption will be seen in its most aggravated form, pre-

lopoietic glands. But to remove the existing accumulations and correct any acid secretions which are liable to complicate these cases, the neutralizing physic is, without doubt, the best preparation that can be used. It may be given at first, till it operates freely, as a cathartic, and afterward in broken portions to act merely as a corrective. Half an ounce of the compound powder being decocted in a pint of water, and, after straining, a small quantity of loaf sugar being added, it may be given in tablespoonful doses once in two hours to a child nine months old, till it operates, and may afterward be continued in dessertspoonful doses three times a day. Meantime a decoction of the *solanum dulcamara* should be given in about the same sized dose.

Various preparations have been recommended for local application in this affection, and I have used, at different times, quite a number of them. The two most efficacious in my hands are, the wild indigo (*baptisia tinctoria*) ointment, with the *hydrastis*, in the form of the yellow ointment, and the common tar ointment. To be of much service, it is necessary that the parts affected should be kept constantly covered with the ointment. But they will rarely fail, especially the tar ointment, to afford comfort to the patient by preventing that intolerable itching that is characteristic of the disease. In addition to the internal remedies already recommended, I have, in one or two cases that had resisted every other remedy which experience could suggest, obtained entire relief from the use of the tincture of *podophyllum*, taken internally in sufficient doses to act moderately on the bowels, and applied three times a day as a wash directly to the seat of the disease. The internal dose will vary according to the age of the patient from twenty drops to a teaspoonful. In my early practice, I was frequently in the habit of using Fowler's solution in doses of from one to five drops twice a day, and, I had no doubt, with advantage.

SCABIES, OR ITCH.

Nature and symptoms. The itch is a specific infection propagated by immediate contact. It is now fully settled

The acarus seems to have its periods of repose and action, if we may judge from the paroxysms of itching which characterize the disease. And though the immediate effect of the laceration of the skin is a temporary respite to the itching sensation, yet it always aggravates the irritation, and produces the sores that often accompany the case.

Cause. Although many circumstances connected with the condition of the system may, and no doubt do, greatly contribute to the production of itch, yet the only immediate producing cause is the insect referred to. It would seem that some peculiar constitutions are more subject to the disease than others, and also that dirt and want of cleanliness often aid much in the production of the disease.

Treatment. Various experiments have been performed upon the living animal, that produces scabies, out of the system, to determine what substances were destructive of it. By these tests it is shown that many medicinal substances would have this effect; but most of them are powerful, and not very safe to administer in such quantities as are required to destroy the animal. Universal experience, however, has shown that sulphur is not only safe in almost any condition of the system, but is also a certain and effective remedy. The method I have often pursued is to prepare an ointment of sulphur, lard, and spirits of turpentine, and the patient, being provided with a suitable night dress, should, just before going to bed, give the skin a thorough anointing, especially in the angles of the limbs, and at every point where any of the eruption is felt or observed. In the morning the whole surface should be washed with soapsuds, and free doses of cream of tartar and sulphur, in equal parts, taken internally. The same course should be repeated three nights and mornings in succession, and will rarely fail to effect a cure. I have yet to meet the first case of failure under this regimen.

There are some objections to the use of sulphur, although it is a specific for the disease, that make it desirable to use other means, if such can be found. An iodine ointment, when properly applied, will generally succeed in arresting it, but will rarely be found as prompt and perfect. It must,

from a blister just forming, to an irritated surface after the scale has fallen off.

Treatment. Connected, as these cases are, with decided derangement of the system, the first indication is to correct that abnormal state, and thus remove the cause of the disease. For this purpose, strict attention to diet and frequent bathing will be important measures to be pursued. All oily and fatty substances should be proscribed, and the patient confined to a vegetable diet of a simple, and for a time, of a farinaceous character. In the early stage a mild course of cooling physic should be instituted, not, however, to the extent of producing irritation of the bowels. Seidlitz powders, or cream of tartar and sulphur, or small doses of the white liquid physic, may be given every few days. For those cases of greatly contaminated systems, the alterative syrup, and the compound syrup of stillingia, constitute as good alteratives as we now possess. But these measures should not be carried too far, or the system may become so much debilitated as to interfere with the eliminating process necessary to remove the cause. After having corrected the secretions, and restored the digestive organs to a better condition by moderate physic and appropriate diet, the system should then be aided by mild tonics conjoined with the alteratives, and a more liberal use of nourishing and digestible food.

It may be necessary, in some stages of this affection, to make use of some local application that shall at least afford some degree of comfort. When there is much soreness and inflammation, the application of a soft slippery elm poultice will soothe the irritation, ease the pain, and afford all the benefit that can be expected from any application of the kind. After the more inflammatory symptoms have been thus subdued, and if it is both inconvenient and unnecessary to keep up the poultice, it may be left off, and its place supplied with the black plaster, or the yellow ointment.

RUPIA.—I refer to this form merely to say that, if I understand what the books undertake to teach concerning it, it is only a modification of pemphigus, being merely an aggravated manifestation of the same disease, and occurring in

matter, and occurring upon the cheeks or face, and sometimes upon other parts of the surface. In some cases it is accompanied or preceded by some constitutional disturbance. It is seen in clusters of small yellowish pustules of various sizes, generally small at first, but afterward enlarging, and occurring upon an inflamed circumscribed base, slightly elevated above the surrounding skin. It is sometimes confined to one cheek, occasionally affects both, or extends to the head. The pustules soon break, or are ruptured, and discharge the matter or fluid they contain, rarely forming a scab, but leaving a more red and inflamed condition of the parts. They commonly bleed when scratched. Sometimes, however, they form a yellowish scab, by the evaporation of the watery portion of the fluid, by which the further discharge is arrested, and the matter thus accumulates beneath. This form of the disease seems to occur somewhat in paroxysms. After a severe turn of itching, and an accumulation of matter for a week or two, the scab dries and falls off, leaving a smooth, red surface, which continues a short time, when the same appearances return as before, perhaps somewhat aggravated, and go through as in the first instance.

The different appearances and extent of the eruption have given rise to a division of this form of skin affections into a number of varieties, having, however, but little if any greater differences than are clearly referable to peculiarities of constitution and location. Thus it has been divided into *impetigo figurata*, *sparsa*, *scabida*, *rodens*, *erysipelatodes*, *larvalis*, and *capitis*. But as they have no practical importance, I shall not attempt to describe their peculiarities.

Causes. What was said on the subject of eczema, applies with full force to impetigo. It is often a hereditary complaint, and will most frequently be found to occur in children being nursed by mothers that have been subject to herpetic eruptions.

Treatment. In treating this form of skin disease, it will be necessary to bear in mind the constitutional character of the affection, and you will not expect, by mere local applications, to cure a disease that is fed by constitutional derangement. The treatment is precisely the same as that already

This disease occurs most frequently as a chronic affection, when the scales, if neglected, often present a thick mass of concentric layers of scales, so heaped up as to be decidedly prominent, with a cracked or fissured surface. The hair in these chronic cases either becomes very thin, or falls off entirely. Upon softening and removing these scabs, the surface generally presents an irritated, raw appearance, with ulcerations of considerable extent and sometimes nearly through the scalp, generally associated with engorgement of the lymphatic glands of the neck.

Scald-head is not unfrequently a very slow and tedious disease, though its duration is very variable, sometimes being very short, and then again continuing for years. It generally subsides gradually, the scales becoming less, and the surface regaining more of the natural color, until the disease finally disappears entirely. In some cases the natural structure is so altered as to entirely destroy the hair follicles, and the surface is left bare, though this occurs in but few cases. In general the hair gradually sprouts again, thickens up, and at length regains nearly its natural state.

Causes. This disease is generally admitted to be infectious, or to be propagated by contact with the cause of the affection, and is no doubt frequently communicated by wiping on the same towel, or using the same comb and brush, with an individual who is affected. Whether its origin can always be accounted for in this or similar ways, or whether it sometimes has a spontaneous and more equivocal origin, is not yet well determined. But when it has once been started there is little doubt that scald-head can be communicated by immediate contact with the matter produced by it. It differs, however, from all the contagious diseases proper in all their great leading characteristics, being neither communicated through the atmosphere, nor having any of the qualities of regular stages and decline. But it answers exactly to the parasitic character of those affections known to be produced by an animal species, and it also answers in these respects to the intestinal entozoa.

of potass should be scattered over the whole surface every second or third day, and followed by the elm poultice. I have obtained the most marked relief in some very obstinate cases by applying a strong solution of the oak caustic with a brush and following with the poultice. I have, in cases of young children who were not well able to bear more severe applications, derived entire relief, where the simple measures first directed failed, from the use of the tar plaster or tar ointment. In other cases presenting an indolent or scurfy appearance, I have often realized as much benefit from the acetous tincture of sanguinaria, followed by the yellow ointment, as from any application I have ever used. But whatever other appliances may be thought most advisable, there are no cases but will be benefited by, and many that cannot be relieved without, constant attention to a thorough cleansing of the parts affected every day with soapsuds. If any constitutional treatment is necessary, the alterative remedies heretofore recommended for other cutaneous affections will be appropriate for this.

EXANTHEMATA, OR RASHES.

The most important among the affections styled *exanthematous* by dermatologists, having been considered in the class of contagious affections, it only remains for me to discuss *erythema*, *erysipelas*, *urticaria*, and *roseola*, among the rashes.

These several affections, though manifesting their peculiarities in characteristic eruptions upon the skin, are, nevertheless, mostly symptomatic of derangement of the system, and, therefore, when viewed in relation to their pathology, should be considered in connection with constitutional disorders. But in pursuing the course adopted in these lectures of grouping diseases together according to their most striking analogies, I do not think it best to remove these affections from the position they have hitherto occupied.

has taken place in that disease, except that it is not usually of so bright a red and shiny color. The condition of the system productive of this disease, frequently gives rise to febrile symptoms, independent of the sympathetic disturbance consequent upon the local difficulty. We may, therefore, expect to find a furred tongue, costive bowels, dry skin, and diminished urinary secretion, with an accelerated pulse, in these attacks of erythema, and these symptoms will generally be found proportioned to the extent of the local disease. In its general character, when not produced by any apparent local irritation, erythema is a rare affection.

Diagnosis. Little difficulty will be experienced by a person familiar with this affection in distinguishing it from others. The only diseases with which it is very liable to be confounded are erysipelas and roseola. From erysipelas it will be distinguished by the lesser swelling, the brighter, more scarlet and shining appearance, and finally by the vesication, that occur in erysipelas, and not in erythema. From roseola erythema may be known by the more rosy color and spotted character of the eruption, which also does not occur in patches, in the former. From the other eruptive affections it will be distinguished by the characteristic eruption of each affection.

Causes. Nothing of importance can be added to what has already been said in regard to the causes of this affection, until our knowledge of the subject is increased by further investigation, and I will only repeat, in general terms, that it is produced by causes which operate locally by exciting irritation, and those that operate through the general system, producing derangement of the stomach and bowels, and of the blood.

Treatment. Most cases of this affection, whether of a local character, or connected with the general system, will require a moderate course of cathartic treatment, and strict attention to the diet for some time. But however efficient these measures may be in correcting the condition of the system most likely to be in fault, yet the paramount point is to ascertain the cause that has brought about the disturbance. If it is a mere local irritation, connected with surplus flesh, and pro-

LECTURE LXX.

CUTANEOUS DISEASES—CONTINUED.

EXANTHEMATA CONTINUED. URTICARIA, OR NETTLE RASH—*Character—Symptoms—Diagnosis—Causes—Treatment.* **ERYSIPELAS**
—Symptoms—Varieties—Anatomical character—Causes—Diagnosis—Prognosis—Treatment. **SCALY DISEASES.—PSORIASIS—**
Different forms described—Causes—Treatment. **LEPRA OR LEP-
ROSY—Description—Causes—Treatment.**

URTICARIA, OR NETTLE RASH.

If any disease is entitled to the appellation of *symptomatic*, according to my observation, it is nettle rash. I have never yet met with the affection when it was not clearly traceable to some anterior disturbance, or abnormal state of the system, and particularly of the stomach and bowels. The disorder is characterized by irregular circumscribed swellings of the skin, generally having, at first, whitish or pale centers, and an inflamed circumference, varying in size from that of a split pea to the bigness of the palm of the hand, and frequently appearing in long irregular welts or clusters of the same appearance. Sometimes when the eruptions first appear they present an entirely light color, but soon become red. They are accompanied by an intolerable itching or stinging sensation, and on being scratched often smart and burn. They sometimes have the appearance that follows the sting of a bee, with a white center, the circumference being but slightly changed, and of a circular form. Scratching or rubbing appears to aggravate them, and slight friction on the skin will often develop them.

The eruption is exceedingly evanescent, being soon devel-

Nettle rash may be looked upon as a harmless disorder, though often troublesome and inconvenient, yet rarely, if ever, proving fatal. Those cases which present periodical characteristics are often severe for the time being, and if improperly treated would no doubt degenerate into severe attacks of bilious fever, and might have an unfavorable termination.

Causes. As already stated, nettle rash will always be found to be symptomatic either of derangement of the stomach, possibly also of the bowels, or of an abnormal condition of the blood. The derangement of the stomach and bowels attendant upon dentition frequently produces the disease. It often results from improper and indigestible food of any kind, but more frequently, no doubt, from some kinds than others. Thus it frequently follows a meal of certain kinds of shellfish, and I have a number of times met with it after a full meal of fresh pork. It may not be peculiar to any kind of food, but often results from excess in eating. It frequently follows the free use of fresh fruit and vegetables of different kinds, peaches, apples, strawberries, or raspberries. Cabbage, turnips, and other succulent vegetables often seem to be the immediate exciting cause of urticaria. A heated and excited state of the system is very liable to be followed by an attack. But in such cases there will generally be a peculiar delicacy in the organization of the skin, and this will no doubt account for its more frequent occurrence in children than adults, and in females than males.

Treatment. The treatment generally required for nettle rash is of a simple character. In most cases a little attention to diet and freedom from excitement is all that is necessary. It will not be enough, however, that patients should simply avoid those articles that may have been supposed to have produced it, but they must be restricted to a very simple diet, avoiding animal food and hot bread. As the disease is most commonly connected with derangement of the stomach, it may be readily removed by the aid of such gentle medicine as experience has found to be of service in such cases. This will be found more especially the case with children, whom it is

by a circumscribed fiery redness of the skin, accompanied by a burning sensation, and generally terminating in vesication; it is associated with or preceded by constitutional derangement and fever.

Symptoms. Erysipelas frequently commences with the symptoms of ordinary fever, and is preceded for a short period by a similar aching or soreness of the limbs, a sense of languor and debility, loss of appetite, vitiated taste and constive bowels, but soon develops more or less of chilly sensations with flashes of heat. Or it may be ushered in with a distinct chill, lasting for some time, but soon followed by high febrile reaction. Simultaneous with this, and sometimes preceding it, nausea and bilious vomiting with great uneasiness will frequently be experienced, together with pain in the back and limbs, severe headache, and often soreness of throat. Sometimes immediately associated with the development of the fever, though most commonly not until a day or two after it, you may discover, on some part of the skin, a small reddish spot often inconsiderable, but generally rapidly increasing, usually quite tender to the touch, and slightly elevated above the surrounding surface, though at this early stage not presenting the characteristic redness which it assumes at a later stage. No part of the surface seems to be exempt from the disease, but it more frequently occurs on the face, neck, and head, than on any other portion. Sometimes it first appears upon the nose, sometimes upon the cheek, or about the forehead, and gradually extends more or less in all directions, but is more apt to radiate in a single course, which is often marked in advance by a slight red streak. As it travels along, the skin assumes a bright and shiny redness, with a circumscribed boundary, and when fully developed is slightly elevated above the surrounding surface. As it moves forward, the point from which it started begins to fade and shrivel, and presents a scaly appearance; though most commonly a yellowish blister rises on the surface which gradually dries and forms a scab, or is ruptured, discharges, and then dries, leaving a rough and scabby surface. The surface under the blister generally heals and forms new skin as the scabs desiccate and fall off;

frequently of a scabby character, upon the surface. But the general course of erysipelas is to vesicate as the inflammation extends, to form scabs or scales as it dries or declines, and to give a light flesh color, for a short time, to the surface, which gradually and finally assumes its healthy appearance.

The evidences of general disturbance and functional derangement clearly indicate, during the whole progress of the disease, its connection with the local difficulty. The tongue is coated, and sometimes dry, with a red tip and edges; the skin is hot and dry over the body, and generally on the extremities, though they are sometimes cold; the bowels are costive, and the arterial action is always increased, sometimes to a very great extent, though generally not over rapid, but full and strong. In some instances, when the scalp and face are the parts involved, the brain becomes more or less disturbed and slight delirium ensues; or in more malignant attacks, presenting congestive symptoms, great drowsiness exists, and the patient is liable to sink into a state of coma.

Individuals of intemperate habits attacked with this disease generally present a decided asthenic state of the system, with low muttering delirium, or great dullness and insensibility, a weak pulse, purple countenance, and generally cold extremities and a cool skin. In such cases the mouth has the ordinary appearances of typhus or congestive fever, dry and scaly lips, red or dry and cracked tongue, sordes on the teeth, rapid and feeble pulse, irritable bowels, and generally more extensive vesication, and formation of abscesses or ulcers.

The books mention a peculiarity of erysipelas that has not occurred in my practice, but which I doubt not may occasionally be met with, viz: a tendency to retrocede and fall with considerable force upon some internal organ, such as the brain, heart, or lungs; and when this does occur it is always attended with considerable danger. This would be known by the sudden disappearance of local symptoms, and a concomitant development of the symptoms attendant upon disease of the organ involved.

I have thus presented the outlines of ordinary cases of erysipelas, with such modifications as I have observed. The

will state one or two cases. A young man, not much accustomed to out-door exercise, though generally enjoying good health, went skating, and, after becoming considerably heated and fatigued, cooled off rather suddenly. During the night he was attacked with a chill, followed by high fever, and the next day an extensive erysipelas appeared on his face and head. A lady, who had long been troubled with costiveness, going a number of days without a passage, and generally having a dry skin, was attacked with a chill followed by fever, which proved rather obstinate, and on the second day extensive erysipelas was manifest on the face. Copious bilious evacuations have always been followed by marked relief in this disease. I therefore suppose that any causes, calculated to retain morbid, effete matter in the blood, will, under circumstances favorable to febrile disease, be liable to produce an attack of erysipelas. In this view long continued costiveness, or the suppression of accustomed evacuations, and sedentary habits, would be liable to operate as causes of the disease. In either of these conditions any thing calculated to destroy or interfere with the proper balance of the circulation, might act as an exciting cause. Thus excessive mental emotions, as anger or great fear, severe exercise, or sudden exposure to cold when the system is heated, may induce an attack of erysipelas; and it is a common attendant upon fevers of various forms. I have frequently seen it in connection with bilious fever, and it very commonly attends winter or congestive fever. The cases of erysipelatous inflammation which sometimes follow wounds or surgical operations, in my judgment, indicate a previously existing derangement of the system.

The cases of an apparently contagious character occurring in hospitals, I have no doubt are modified by the animal miasm that abounds in all such situations, and the disease occurs so frequently in such places that it often *appears* to be communicated from one person to another. But I feel assured that a careful discrimination would discover an important distinction between such cases and contagious affections, and at the same time would show an immediate relation to infec-

In the early stage, before the disease of the skin is apparent, there will generally be some tenderness in the tissues which are to be affected. If on the neck, the lymphatic glands will be found slightly enlarged, and tender to the touch. The intense redness, of a circumscribed character, with a slight elevation, especially after vesication has taken place, will enable you to distinguish it from erythema,—the only disease with which it is liable in any wise to be confounded.

Prognosis. If my personal experience should be taken as the test of results, there are few diseases the prognosis of which would be considered more favorable. Thus far in my practice, I have no recollection of ever having lost a case, out of at least a hundred. There can be no doubt, however, that erysipelas in its epidemic character is a more formidable disease, and far more likely to prove fatal, than when it occurs in a sporadic way. But even in its epidemic form, when internal organs are not involved by metastasis, and when properly treated, it should rarely have an unfavorable termination. When complicated with other more grave disorders, erysipelas furnishes additional motives for alarm, as indicating derangement of the system not readily corrected. Thus when occurring with typhoid fever, it shows a condition of the system always portentous and to be feared. So also when occurring as the sequel of dropsical affections, in debilitated and worn-out constitutions, the termination of the case may always be looked upon as unfavorable.

Treatment. In most cases of erysipelas that have occurred in my practice, the febrile phenomena have presented a distinct remittent character indicating the presence of malarial influences, and have required a course of treatment very different from that which would, doubtless, be found necessary in some sections of the country. The effect upon the local inflammation of the anti-periodic remedies, when administered for the periodical attachment in these complicated cases of erysipelas, very clearly settles the compatibility of those remedies with inflammatory action however intense. Instead of aggravating the local affection, I have often seen the fever decline, a gentle perspiration ensue, and the inflamed parts become less

the usual time for an exacerbation, or a sensible increase of the fever, or, if the fever did not essentially vary, until the specific effect of the medicine had been realized, when it should be suspended ; and on the next day repeated with the podophyllin and leptandrin, as before directed.

If, however, considerable soreness of the throat, with evident derangement of the stomach, should complicate the case, a moderate emetic may be premised before administering the quinine and iron ; or if the case did not yield, as you might think it should, after giving the antiperiodic remedies as before directed, the emetic may be afterwards given. But if it is not deemed necessary to treat the case as for the malarial complication, the main indication is to excite into as active a state as can well be done all the great depurating functions by which all the morbid accumulations, that evidently have much to do in producing the disease, can be eliminated from the circulating mass. Thus the skin, kidneys, and bowels, with their contributory glandular associates, should all be simultaneously acted upon by the remedies best calculated for this purpose. The skin should be frequently and freely bathed with the tepid alkaline and whisky wash, while at the same time the remedies given to excite the other secretions should be combined with such as will determine to the surface and secure a moderate diaphoresis. It will not be best to administer active sudorifics until after the bowels have been freely acted upon, so as to admit of quietly remaining in bed. Therefore as simple a remedy as can be given at this stage of the case is a solution of acetate of potash in from three to five grain doses every two hours. This has the advantage, also, of operating with considerable efficiency on the kidneys. But the most important measure, or at least that which seems to be most efficient in mitigating the symptoms, will be found to be a thorough cholagogue cathartic. The best combination that I have found is the compound taraxacum and podophyllin pill, which I have often heretofore recommended. One of these pills may be given every six hours, until a free cathartic effect is produced on the bowels, and you will rarely be disappointed in discovering in the evacuations manifest evidences

quinine and acetate of potash, applying at the same time hot fomentations to the stomach and bowels; and the result was entirely satisfactory and favorable.

Although I have no confidence in the curative influence of local appliances in erysipelas, yet some local treatment will frequently afford temporary relief to the patient, and tend to restrain the traveling character of the inflammation. I have, however, seen the inflammation overleap blistered surfaces, and extend as rapidly as before the blister was used. I have also seen it bid defiance to a circle of nitrate of silver, and even to the contracting effects of collodion, though applied to both the inflamed surface and the adjacent healthy skin, and occupy the contiguous parts as though they had never been applied. But it frequently happens that some particular local measure is used, after appropriate general treatment, with the apparent effect of affording relief to the local symptoms, and it thereby often acquires the reputation of performing a cure. I have not, however, seen any satisfactory evidences of a curative character in *any* local treatment, and am compelled to look upon such appliances in erysipelatos cases as merely palliative. This purpose some of them are well calculated to answer.

My experience with nearly the whole catalogue of local measures, blisters, iodine, collodion, nitrate of silver, acetate of lead, sulphate of iron, burnt or scorched flour, and hot slippery elm mucilage, has led me to consider the two latter as the most beneficial. I have especially derived better effects from the application of linen cloths dipped in hot slippery elm mucilage, and changed as often as they lose their slippery feel, than from any other measure. You will rarely fail to observe the red and purple aspect of the local difficulty change to a lighter pink color, and the swelling somewhat diminish under the application. It has the advantage also of being very grateful to the feelings of the patient, affording relief to the burning and throbbing pain that often accompanies the disease. For a change I have frequently applied scorched flour, allowing the surface, slightly covered with the dry flour to be exposed to the air. If vesication has taken

PSORIASIS.

This is a cutaneous disease characterized by slightly elevated, pimply, inflamed spots on the skin, covered by light colored scales, without any vesication. The disease presents a number of modifications, all, however, exhibiting the characteristic red and scaly appearance. The different forms of the affection have been distinguished by authors according to the supposed characteristic of each. Thus they mention the *psoriasis guttata*, presenting the small papulous and isolated eruption, without a depressed center, but covered on the top with a dry scale; and the *psoriasis diffusa*, in which the papulous elevations are so numerous as to present almost one continuous blotch, covered with a dry and scaly scurf. But when deprived of the scales, the surface presents a red and chapped appearance, resembling somewhat one modification of herpes. This form is apt to occur about the joints, on the anterior portion of the legs or the back of the arm, though it is sometimes found on the back and other parts of the body. It is attended by a burning and smarting, or a troublesome itching sensation. When the surface is chafed it is liable to inflame, and then often presents cracked fissures, which bleed and become sore and painful.

This scaly affection presents itself in a more severe and aggravated form, described by the term *psoriasis inveterata*. But it is supposed to be merely an aggravation of the last described modification, produced by neglect and want of cleanliness, and occurring in old and infirm constitutions, or in those whose systems have been contaminated by intemperance and filth, or extreme privations and hardships. It presents an inflamed and thickened condition of the skin, with considerable fissures, which often become filled with the dry scales collected from the surface. It sometimes extends over a large portion of the surface, and especially to the feet, hands, and angles of the extremities, so as to embarrass the ordinary movements, frequently producing pain and great inconvenience.

pose. In severe or extensive attacks, not only as a preparatory step to a more general course, but also as exercising an immediate influence on the blood and especially the glandular secretions, it will be advisable to begin the treatment with a pretty thorough hydragogue cathartic. It may also be advisable to repeat it occasionally during the continuance of the more inflammatory symptoms; unless some appearances of gastro-intestinal irritation should present objections to the use of active cathartics. The antibilious physic and cream of tartar is, perhaps, as mild as any that can be given, and at the same time sufficiently thorough. When the tongue presents a thickly coated appearance and other evidences of gastric accumulations, a mild emetic may be advisable. But after the first passages are freely evacuated, and the system is thereby prepared to respond readily to the action of other medicines, a decoction of *solanum dulcamara* is, for the majority of these constitutional skin affections, the most effective medicine we possess. As an alternate in such cases, the syrup of *stillingia* and iodide of potash is one of the most reliable alteratives that can be used. Whichever of these remedies is preferred, it should be remembered that, to derive any marked advantage or permanent effect, it should be persevered with for some length of time.

When the system is greatly enfeebled by age or intemperance, it may not be advisable to administer as active treatment as that recommended in the beginning; emetics, especially, in such cases sometimes appear to have unfavorable effects, though a moderate cathartic will rarely be found objectionable, unless its use is contra-indicated by evident irritation in the stomach and bowels. At any rate the *taraxacum* pill may be given until a free bilious character is manifest in the evacuations. Such cases, also, will not bear as close and rigid a course of dieting as may be necessary for more robust and plethoric constitutions.

As a local measure, the application to the diseased surface of linen cloths dipped in hot slippery elm mucilage, and frequently changed, as recommended for erysipelas, will afford more comfort, at the same time that it will be found a better

size of a split pea to that of a dime, and perhaps larger, with a depressed center, and covered with light colored thin scales. These eruptions occur mostly on the extremities, particularly the forearms, and sometimes appear in clusters, but more generally are irregularly scattered upon the parts affected, extending frequently to the body and head. The eruption presents a very striking and peculiar appearance; the slightly elevated, circular or irregular, dark red spots, depressed in the center, and partly covered with a tough, yellowish and shining scale, contrast singularly with the natural and healthy condition of the intervening skin, and leave a dark purple spot for some time after the eruption has subsided. In some cases the circular spots enlarge to a considerable size, radiating in one or more directions, and giving to the eruption an irregular and ragged appearance. Or they sometimes extend in every direction, and still retain their circular character, inflaming at the circumference as they progress, while the central portion begins to assume a more healthy state, and thus present, in some respects, the appearance of a variety of herpes. In very severe cases the eruption greatly exceeds its ordinary size, extending over a large surface, running together, and exhibiting the appearance of a continuous disease, though, mainly, the outlines of the circular form of the separate eruptions may be discovered. When, in these extensive scaly patches, the scurf is removed, furrows of considerable depths will be found filled with the crumbled scales. These cases exhibit strikingly the characteristics of psoriasis; and from the general character of the disease, little doubt can be entertained that it is closely allied, in its essential nature, to the latter affection. In fact, it is extremely questionable whether any greater difference is ever observed between the two affections than is often seen in various other diseases, dependent on difference of constitutions, and on the state of the system at the time. The undoubted connection of lepra with the condition of the general system accounts for its long continuance where it is neglected and allowed to progress without treatment.

Causes. What has been said in regard to the cause of

LECTURE LXXI.

NERVOUS DISEASES.

General remarks. APOPLEXY—Definition—Symptoms—Duration—Anatomy—Causes—Diagnosis—Prognosis—Treatment.

Before closing the present course, I propose to devote a few lectures to the consideration of some of the most common and important nervous disorders. In a course embracing the wide field of theory and practice, it is impossible to give any subject that extensive and minute consideration that might be convenient and interesting, if we were limited to a single disease, or to a single class or group of diseases. We have, therefore, to confine ourselves to the most important and common affections, and to the most prominent points connected with the subjects thus embraced. The full discussion of every point connected with the disorders legitimately included under the head of nervous affections, would occupy a full course of lectures, or would fill a volume of any convenient size. With due regard, therefore, to our time and space, I shall only be able now to take up the most common of this class of diseases, and consider those points only that are necessary to a proper appreciation of their character and treatment.

APOPLEXY.

The most correct signification of the term *apoplexy* is, no doubt, a sudden loss of consciousness and voluntary motion. And the most common and apparent attendants upon this state of the system are a labored and oppressed respiration, and a full, but slow, and sometimes irregular, pulse. The

full development of the disease. As, however, the more perfect determination of the case is approaching, the incipient stupor, which follows the vomiting and yawning, is accompanied by a partial paralysis of one or both eyelids, by a difficulty in speaking, and sometimes an inability to move the limbs, until the insensibility and stupor fully determine the character of the attack. Yet it is very rare for these symptoms to precede an attack of apoplexy for any great length of time before a full manifestation of the disease. They more commonly follow directly the exciting cause, such as a full meal, or sudden mental excitement.

Apoplexy does, however, occur without any of the symptoms enumerated as marking its approach, at least so far as we have an opportunity of determining. Patients are sometimes suddenly seized, and fall insensible to the ground, when apparently in the enjoyment of perfect health. But we can not be permitted to doubt that more or less of the symptoms mentioned must be experienced for a short period previous to such an attack. When fully developed, the condition of the patient is one of almost entire insensibility, with complete loss of consciousness. In most cases, pricking or pinching will produce a slight manifestation of uneasiness, though without any conscious efforts to avoid it. But a slight motion of some of the muscles, particularly those about the face, may be observed, such as a slight scowling or uneasiness, and sometimes there is an audible moan upon the sudden application of heat or pinching, though in some instances coma is so profound that the patient will manifest no evidences of sensibility whatever. The countenance is expressive of a deep and unawaking sleep, the patient lying with the mouth open—the respiration being slow, labored, and stertorous—often snoring, like that of many healthy persons after severe fatigue; but the face is mostly flushed and tinged, and often purple with blood. The pulse is full and generally strong, but slow, and sometimes intermittent, in some cases falling from the natural standard of seventy-five or eighty to twenty-five or thirty, or not quite so slow. The pupils, when examined, will generally be found permanently dilated, though the

patient is entirely restored, though in most cases of severe attacks it may be years before restoration is complete, if, indeed, there is not more or less mental imbecility during the remainder of life.

In fatal attacks, patients are frequently taken off in a few hours, but they generally linger for a number of days, gradually becoming more profoundly comatose; the pulse becomes small and frequent; the extremities are cold; the respiration is more labored and oppressed; and finally a cold sweat bathes the surface, the lips become purple, and the patient sinks into a state of asphyxia and death.

These, then, are the ordinary symptoms both of a fatal and a favorable case of apoplexy. But they are subject, like those of other diseases, to very considerable modifications. Thus instead of a flushed and purple face, some patients appear pale and haggard, with a small and frequent pulse from the beginning, and they sink into a profound and lethargic sleep, never to rally for a moment, the vital powers yielding from the very first. In some cases, patients are seized with nausea and vomiting after a hearty meal, and immediately present unmistakable evidences of the rapid approach of an apoplectic attack. Or they may be taken while at work and suddenly fall, the stupor and insensibility soon following. Patients who have recovered from one attack are very liable to a second, and very rarely recover from a third.

The *anatomical characteristics* of apoplexy are perhaps as various as the symptoms of the disease during life. The morbid developments observed by different writers have given rise to a variety of speculations in regard to the essential character of the disease. In some instances the most careful examination has failed to detect any structural alteration in the brain or its membranes. But other cases present the meninges of the brain, and especially the lining membrane of the ventricles, highly injected. Effusion of serous fluid has, in other cases, been the most prominent and leading alteration that is discovered both in the ventricles of the brain, and in the cavity of the arachnoid membrane. But the most common alteration discovered by post mortem investigations is

accumulation, the fluid portion of the blood is absorbed after a time, and finally the patient either partially or entirely recovers.

Softening of the brain, producing apoplectic symptoms, generally results from chronic disease, and is not to be considered as true apoplexy.

The intimate nature or true pathology of apoplexy may be reasonably inferred from the evidences afforded by post mortem research with more certainty, perhaps, than that of most other diseases. The most common abnormal lesion which the examination of fatal cases shows to exist in apoplexy, is sanguineous effusion into the ventricles, arachnoid cavity, and the substance of the brain. This, of necessity, must produce pressure upon the brain, in proportion to the extent of the accumulation, and a consequent obliteration of the mental faculties, and loss of voluntary motion. Though the effusion, all other things being equal, must necessarily produce its effects in proportion to its extent and amount, yet the extent of the effects will depend somewhat upon the length of time occupied in the process of accumulation. The more gradual the effusion, the greater will be the toleration, up to a certain point. Thus if the sanguineous effusion is very slow and gradual, the effects will be much less apparent than when the same amount accumulates suddenly. But when the accumulation is sufficient to press with considerable force upon the blood vessels of the brain, the symptoms of more serious embarrassment begin to be developed. The same symptoms will be likely to follow accumulation of blood, whether it is effused, or whether it is merely accumulated in the vessels of the brain, though in the latter case the symptoms may very soon subside, and the patient rapidly recover. But when the blood has actually passed out of the vessels, and is effused either into the substance of the brain, the arachnoid cavity, or the ventricles of the brain, if the patient survive the immediate shock, the system may rally, the effusion be gradually absorbed, and the patient finally recover, with such embarrassments only remaining as necessarily result from the violence done to the nervous matter of this important viscus.

citing mental emotions, joy, anger, grief, terror or fear, all which have, in turn, been known to induce the disease. Thus it is said apoplectic attacks are frequently observed during terrifying revolutionary struggles.

Pressure upon the vessels of the neck, by retarding the return of blood from the brain, may produce nervous congestion, resulting in apoplexy. Tight necklaces, neckerchiefs, and similar appliances may produce this result. Exposure to the heat of the sun, violent fits of coughing or sneezing, and other influences of the kind, have also been known to bring on attacks of the disease.

Diagnosis. It is sometimes very difficult to determine the existence of apoplexy in the absence of a correct history of the attack; on the other hand, it is not very difficult when we can learn the history of the case, the mode of its approach, and the probable exciting cause. These circumstances will also serve to show the kind of apoplexy, whether it be a mere venous congestion, a serous effusion, or the more common sanguineous exudation in the substance, between the membranes, or into the ventricles of the brain. Thus, if the case is connected with other dropsical symptoms, and the attack has been gradual in its approach, we may reasonably conclude the case is one of serous apoplexy; but if the attack has come on more suddenly, and the coma continues to increase with all the other symptoms of an apoplectic seizure, and especially with some paralytic symptoms, we should run but little risk in determining the case to be one of sanguineous apoplexy. A comatose condition of the system from intoxication will readily be distinguished by the appearance of the patient and the smell of his breath. The coma produced by narcotics, though strongly resembling apoplexy, will generally be readily distinguished by the condition of the circulating and respiratory functions. In apoplexy the respiration is stertorous and labored, without the cold and clammy sweat, purple lips, and shriveled fingers of narcotism, with a full, strong, but slow pulse; while in the coma of narcotism the pulse is more frequent, and respiration irregular, ceasing for a time and then commencing again. But occasionally an

more imperatively to require the use of the lancet than apoplexy, and yet in none are the advantages derived from it more equivocal and unsatisfactory. I do not now propose, however, to go into a discussion of that question, but will simply remark that what I have heretofore said on the subject of blood-letting applies with more commanding force in this disease than in most others. I shall, therefore, proceed immediately to recommend the measures which are equally sanctioned by long experience and the soundest induction.

No measure can be more immediate in equalizing the circulation, and thereby diverting from the brain, than the application of ligatures to all the extremities, as I have heretofore directed for other affections. The ligatures should be applied so as mainly to interrupt the venous circulation, and should be thus continued till other more permanent measures can be resorted to. If from the history of the case, you have clear evidence that the stomach is loaded either with undigested food, or other substances calculated to embarrass the system, more advantage will be derived from a speedy emetic than from any other medicine that can be given. The acetic tincture of sanguinaria and lobelia is, perhaps, the most prompt and efficient, and should be given in tablespoonful doses diluted with warm water, and repeated every ten or fifteen minutes. Emetics, however, are very doubtful remedies, unless the stomach is greatly deranged with undigested accumulations, or vitiated secretions, and should not, therefore, be administered unless this state of the case clearly exists.

But the thorough action of a cathartic is, in almost any state of the case, not only proper, but highly important. It will not only remove any accumulations that may exist in the bowels, and, if the right kind is administered, stimulate the secretory organs, tributary to the alvine discharges, to an elimination of morbid matter, but will also reduce the amount of the circulation, and thus divert from the brain more efficiently than can be done by any reasonable venesection. Moreover, as was abundantly shown by M. Magendie and others, it removes those elements of the blood most embarrassing to the circulation of that fluid in the small vessels,

the case seem to justify. But the cupping and cathartics, with the revulsive applications, will be most likely to require a repetition. In addition to these measures, if the skin is hot, frequent bathing of the whole surface with whisky and broke water will be found to have a beneficial effect in equalizing the circulation, and may be repeated three or four times a day.

If, after these measures have been carried into execution, the symptoms continue, and the patient still survives, you may reasonably conclude that you have a case of effusion that must necessarily undergo the tardy process of absorption. In this state of the system an issue may be applied to the back of the neck, while the patient is put upon the use of the decoction of apocynum, given in sufficient doses to keep the bowels freely open, which will be found one of the most efficient stimulants in the disposition of the effused fluid that can be given.

The diet during the attack should be exclusively of a simple fluid kind, and this in small quantities. And even during convalescence it should be simple and easily digested, though by no means so rigid as not to afford ample sustenance to the system, to repair the waste that is constantly going on, and supply the loss produced by the disease. Small quantities of light animal food may be allowed, but no hot bread, pastry, or other indigestible articles. Milk, soft eggs, roasted potatoes, and such as the experience of the individual will suggest, will be proper.

The exercise should be moderate at first, but gradually increased as the patient shall be able to bear it without fatigue, using great care at first to avoid fatigue or excitement, lest a relapse should be induced. In prescribing for an apoplectic patient, it is as much your duty to direct him in the right course to prevent a recurrence, as it is to remove it when called for that purpose. You should, therefore, warn your patients of the danger of indiscretions and irregularities in producing second attacks, and that these are far more serious than the first. While they should guard against errors and excesses in eating, drinking, and in exercise, and against all

LECTURE LXXII.

NERVOUS DISEASES—CONTINUED.

EPILEPSY—FALLING SICKNESS. *Symptoms—Variations in manifestations—Effects on general system—Anatomy—Causes—Diagnosis—Prognosis—Treatment.*

Few diseases present more frightful and alarming appearances than an attack of epilepsy. It is characterized by a sudden paroxysm of severe convulsions in all the voluntary muscles, with loss of consciousness; upon a decline of the convulsions, a profound sleep soon follows, which generally amounts to coma, and from which, after continuing for an hour or two, and sometimes longer, the patient rouses as from a gentle slumber, perfectly unconscious of what has transpired. These convulsions occur in irregular paroxysms, and leave the patient with only a slight soreness of the muscles from the violent efforts that have been made.

Symptoms. An attack of epilepsy is frequently preceded by symptoms which warn the patient, subject to the disease, of its approach, though cases are met with in which the convulsions are the first manifestation, and of which the patient has no recollection upon his recovery. When the premonitory symptoms do exist, they last only for a very short time, merely giving the patient a momentary warning of the approaching struggle, or they may last long enough for preparations to be made to protect the patient from dangerous accidents. These premonitions also vary in their character; in some cases they consist, not of any one, distinct sensation, but of a universal sensation, as it were, which, under other circumstances, or in an individual not subject to such occurrences, would make no impression, and come to be noticed

to a paroxysm, as they are usually attacked without any warning, suddenly falling down wherever they may be, often into the fire, with a piteous and distressing shriek, of which they are also unconscious. The convulsion gives a most distressing and startling aspect to the patient, and however accustomed to the disorder, or however conscious that the immediate attack is not one of much danger, a physician can rarely be found of nerves so firm that he is not under the necessity of collecting his disturbed and confused faculties, in order to resist the example of all around him, and prescribe with a clear perception of what ought to be done. The voluntary muscles of the patient are all in an agitated state, some contracting with great violence in a spasmodic condition, then again relaxing, and the antagonistic muscle acting with similar violence, thus distorting the system into every conceivable shape and condition; the head is drawn to one side or backwards, while the limbs are violently thrown in every direction; the muscles of the face contract with irregular convulsions; the eyes stare, now open and then shut; the jaws are tightly closed, and then relaxed, when, perhaps, the tongue, being thrust out of the mouth, is caught between the teeth by a sudden contraction of the jaws, and is often bitten nearly off, or severely injured. From the distortions produced by the muscular contractions, and from the determination of blood to the head, the face usually presents a swollen, purple, and most frightful appearance. In this condition patients are entirely lost to all the ordinary influences affecting any of their sensibilities. So far as we are able to judge, they might be torn to pieces or dissected, a thunder trumpet might be blown in their ears, or any other equally powerful influence might be applied to their respective senses, without obtaining any response, or producing any sign of consciousness or feeling. The respiratory function, also, participates somewhat in this universal tumult of the physical man; it becomes irregular, difficult, and generally imperfect, owing to the rigidity of the abdominal and other muscles, which prevents a proper expansion of the chest, and hence the purple color of the face produced by want of proper aëration of the blood.

perhaps, terminate in apoplexy and death. In other cases, instead of waking as usual from the sleep or partial coma, patients, in consequence of the great disturbance of the nervous system and particularly of the brain, awake in a complete or partial state of insanity. But these symptoms generally subside in a short time, continuing, however, in some instances for a day or two.

In some cases, as before stated, the attack is not fully developed, the patient feeling only the premonitory symptoms, or experiencing a very mild form of the disease. This is very apt to be the case as the attack is approaching when the cause of the disease is not so overwhelming, but is allowed to continue. In some of these cases patients will lose their consciousness for a few moments, without falling or being convulsed, and suddenly recovering will pursue the business they were engaged in. Or the system may be more disturbed, so that patients appear excited, or perhaps fall down without spasms, and thus the disease will gradually increase in violence until the true epileptic convulsion, with all its horrifying attendants, is developed. These symptoms may come on at any time, while at work or at play; or they may occur at night, while the patient is quietly in bed, before he goes to sleep, or after he has taken a nap.

Thus it will be observed that, though a fully developed epileptic convulsion presents nearly the same character in all cases, yet there is considerable *variation in the manifestations* of the disease, taken in all its stages. The intervals of the disease are not less variable than the progressive and fully formed stages. In some instances a single paroxysm only occurs, while in others the second attack is put off for months, and perhaps for years. But after the second attack has taken place, the period for the return of the paroxysms is not generally so long deferred, and thus they continue gradually increasing until the case is relieved, or until it terminates in a more serious disorder, producing a state of mental imbecility or permanent insanity, which are aggravated by frequent recurrence of the epileptic attacks. Some cases that appear to be connected with the menstrual function return at

of disease. Although the brain cannot be supposed to be the primary seat of every case of epilepsy, I can scarcely doubt that it is indirectly concerned in every attack of the kind, and I am equally well satisfied that if we were as familiar with the minute physical qualities of the brain, both in health and disease, as we are with some other material substances, and understood their examination, we should, without doubt, find in some of its parts changes bearing the same relation to healthy structure, which we find in tuberculated lungs, or in other more common affections in organs better understood.

Causes. We cannot always trace out the cause of epileptic attacks, though a careful investigation of the predisposition will generally enable us to hit upon the apparent cause. But what condition of the system, or what changes, either accidental or otherwise, in the condition of the nervous system, are necessary to constitute a predisposition to epilepsy is difficult to determine. It may arise from the size of the vessels of the brain, or from the great nervous irritability that has been induced by peculiar circumstances, or from other influences not well understood. The statistics of epilepsy show beyond question that it is more frequent among the young than in those advanced in life, and we may, therefore, infer that age has something to do in predisposing to the disease. In this, as in many other diseases, the tendency to a predisposition, created by accident or otherwise, is no doubt, in many instances transmitted from parent to child. Excessive mental labor may have the effect of weakening the nervous system, and thus act as a predisposing cause of epilepsy. Injuries to the brain are frequently followed by attacks of epilepsy, and when the injury is productive of permanent pressure or irritation, the disease is almost sure to be induced by any trivial causes that excite the brain. Venereal indulgences, and especially masturbation when it results in involuntary seminal discharges, are often followed by epileptic attacks. Functional disease of the uterus is, perhaps, one of the most prolific sources of epilepsy. This is most likely to occur about the period for the first appearance of the catamenial evacuation, and by neglecting the appropriate treatment for the

muscles to which those nerves are distributed ; but being deprived of that voluntary direction, which they are wont to receive from the great central nervous organ, the involuntary movements which are excited in the muscles become violent and unique in proportion to the amount of disturbance at first produced on the brain. The disturbance, however, existing in the spinal center, may only be a sympathetic relation, and not a propagative irritation ; for the violence manifested in the muscles of voluntary motion does not correspond to any amount of sympathetic disturbance that might be communicated to them through the motor nerves. Besides, the excitement of involuntary movements through the ordinary and, so far as we know, the only channels of voluntary action, would present an unusual phenomenon.

Diagnosis. The only diseases with which epilepsy is liable to be confounded, or which are liable to be mistaken for it, are hysteria and apoplexy. From apoplexy it is readily distinguished in all its stages, except the comatose state ; in some cases, the pulse and respiration in that stage of epilepsy, after a severe convulsion, resemble an apoplectic state. But the history of the case will be sufficient to decide the character of the attack. From hysteria it will be distinguished by the frothing at the mouth and biting of the tongue in epilepsy, and from the absence of coma, the alternate crying and laughing, and the *globus hystericus*, that occur in hysteria.

Prognosis. Recent attacks of epilepsy can, as a general thing be permanently cured ; and even in its more persistent character, where we can have a clear perception of the cause of the disease, it may be relieved, and often entirely removed. But as we generally find it, comparatively few cases are ever restored. When, however, the affection is dependent upon pressure on the brain, and the locality of that pressure can be satisfactorily ascertained, it can be removed with the trephine, and the patient be restored to health. There is no doubt, also, that many threatened cases of epilepsy have been prevented by the timely administration of appropriate medicines to remove the cause of epileptic convulsions, when

doses, or the alcoholic tincture of lobelia may be given alone in tablespoonful doses, and repeated every ten minutes, until vomiting takes place. Or if the violence of the paroxysm prevents the administration of the emetic, the same medicine may be given in the form of an injection, in double the quantity, diluted with two or three times the amount of water. Administered in this way, it will often operate as promptly and effectively as when given in the ordinary way, and in either way will rarely fail to produce immediate and satisfactory results. It is a most efficient antispasmodic, and will almost always entirely relieve the spasm as soon as it operates freely. And even though you should find yourself mistaken in supposing the cause of the disease to be accumulations in the stomach, its action will be favorable in relieving the convulsions.

When the exciting cause is found to be mental excitement, the indications then would be to relieve the irritation of the brain, and equalize the circulation. In this case, ligatures may be applied to the extremities around the arms and thighs; or to only a part of these places, if thought sufficient; cups may be applied to the temples, and a sinapism to the spine; the head should be bathed with water quite warm, and gently fanned, and an enema of asafetida and lobelia may be given. When these measures are all applied they will generally succeed in relieving the spasm. Thus, guided by the ordinary principles of philosophy, you should proceed in the application of those measures best calculated to remove the immediate cause of the disease, whatever that may be.

But in any and every case, whatever other measures may be found necessary, every thing should be removed from the patient at all calculated to obstruct or embarrass the circulation: the cravat should be removed, shirt-collar opened, heavy garments taken off, under-clothes loosened, and the patient placed and kept in a position best calculated to secure the greatest comfort and freedom from injuries, and, if possible, with some moderately hard substance interposed between the teeth to prevent the patient from biting the tongue; but no

be scarified, the bowels kept open, and the diet very simple and moderate till the fever subsides. If it presents the character of cholera infantum, the measures adapted to that disorder would be proper. That form of the affection which occurs at or near the period of the catamenial evacuation will be frequently found associated with an abnormal state of the uterine functions. The menstrual discharge will either be delayed, or not sufficiently free, or not often enough, or perhaps too frequent, and if a convulsion occurs as a consequence of the nervous derangement connected with it, and repeated attacks are allowed to follow, before efficient means are taken to regulate this discharge, the disease is liable to become quite obstinate, and may ultimately prove entirely incurable. Such remedies should be used as are particularly adapted to restore this evacuation to its healthy state. For this purpose a pill after the following formula will be found a valuable remedy in all cases where the discharge is deficient, whether it be an entire suppression, or only a diminution.

R. Sulph. ferri, Gum guiacum,
Gum myrrh, Aloes, equal parts;
Alcoholic ext. macrotys, q. s. to form into a mass :
Divide into pills of ordinary size, say six grs. each ; one
or two to be taken at night.

This, with such other medicines as are calculated to restore the regular monthly evacuation, should be resorted to and persevered in till the object is accomplished. Meantime, for the purpose of promoting a more healthy state of the system, and subduing the irritation that has been reflected upon the brain, I have been much accustomed to direct the application of an issue to the back of the neck, to be kept discharging for a number of months ; while the cold sponge bath used every morning before dressing, and followed by friction to secure a healthy reaction, will serve not only to produce a more natural and proper condition of the skin and capillary circulation, but will also be found to have a beneficial influence on the health, and subdue the nervous irritation existing in the case. Such attention should also be given to the diet,

can be used with much expectation of permanent benefit. But we do possess a remedy that can be recommended as fulfilling these indications with more certainty than any heretofore used for this purpose. I refer to macrotin. This should be given in from one to two grain doses twice a day, commencing with small doses, and gradually increasing, until its specific action is discovered, when it may be slightly diminished, if its effects are too decided. Its specific effect is a slight pain in the head, which, however, is transient, and unless it becomes severe, the medicine should be continued in the ordinary dose. When the case presents any decided periodical attachment, you will rarely be disappointed in deriving advantage from the use of anti-periodics, as in the case of other diseases where these symptoms are present. The quinine and iron are, beyond all question, the most reliable of any remedies that have heretofore been used. In these cases, it will be necessary to use them in quite as large doses as in other affections, and to persevere with them longer. They should be commenced a few days previous to the expected paroxysm, continued for a short time, and then discontinued; but beginning again before the next period as before. They should be administered for a number of months. The valerianate of quinine has some advantages over the sulphate, and it may, therefore, be used in conjunction with the iron in preference.

Along with this general restorative course, which is almost universally called for in the treatment of epilepsy, it may be necessary occasionally to administer for a short period some of the more direct sedatives. As a general rule, the most appropriate will be either hyoscyamus or belladonna. The tendency of opium to produce inactivity in the glandular system, and the liver in particular, together with its constipating effect upon the bowels, renders its administration injudicious when it can be avoided.

Few diseases have been the subject of empirical treatment to a greater extent than epilepsy, and there is none, perhaps, for which there are so many "infallible cures and specifics," if we are to believe the old nurses as well as other members

LECTURE LXXIII.

NERVOUS DISEASES—CONTINUED.

DELIRIUM TREMENS—MANIA A POTU. *Evils of intemperance generally—Legislation required—Cause of DELIRIUM TREMENS—Symptoms and stages—Complications—Diagnosis—Prognosis—Anatomy—Treatment—Opium and other common remedies—Author's practice—Quotation from Dr. Gerhard.*

In republican countries like ours it is difficult, if not impossible, to impose restraints which, in some respects, are necessary to the well-being of individuals. If it is the duty and object of the state to provide, by all just and feasible means, for the well-being of its members, and the good order of society, it must be obvious to every reflecting and disinterested mind that the deplorable evils flowing from the unrestrained traffic in spirituous liquors loudly call for stringent and radical legislation. And yet it cannot be denied that no system has yet been devised which goes to the root of the evil, or which has fully realized the expectations of even its friends, in repressing this vice. The unequalled facilities afforded in this country for obtaining alcoholic beverages, together with the exhilarating influence which they have upon the system, combine to render their use very common among all classes of the community. The occasional use readily grows into a fixed habit, which becomes an inexorable and tyrannical demand, before which the mightiest intellects and loftiest moral feelings are hopelessly borne down and depraved, and by which the noblest individuals are converted into malignant fiends, or transformed into irresponsible maniacs. It is this condition of the system that I now propose briefly to consider.

Although alcoholic stimulants are the remote *cause* of the

Symptoms and stages. The division into stages made by most modern authors is of no more practical utility than a similar division in any other disease, where the symptoms are progressive, and vary at different periods. In some instances, however, it may afford the slight advantage of following the disease more clearly than we should be likely to do by pursuing the course of describing it as a whole. The division referred to is into three stages. But they so often mingle as to frequently destroy the distinctions, and render it almost impossible to point out the precise line of demarcation. Besides, the symptoms usually described as belonging to the first stage cannot, with any propriety, be considered a feature of delirium tremens, since they pertain to almost all cases of intoxication, and may recur a hundred times in the same individual, without any nearer approach to the genuine disease. This stage, the authorities tell us, is characterized by nervous agitation and mental depression, called the *horrors*. These symptoms are accompanied by considerable muscular weakness and trembling, especially in the hands, and sometimes extending to other muscles, particularly to those of the face. It is, in short, a state of great exhaustion of the system, with a feeble and frequent pulse, a cool skin, and a tendency on the part of the patient to a quiet and moody state of mind. The hands are unsteady, and the tongue will tremble when protruded, which can be done only with difficulty.

The *second* stage commences with the symptoms of the first, after a day or two of abstinence from the long accustomed stimulation. A more excited state of the mind and a talkative disposition will be observed. The muscular tremors increase, the appetite is entirely lost, and patients find themselves unable to sleep. At this stage, the individual begins to have illusory thoughts, and to see objects with a double appearance, or often imagines the existence of forms, things, and scenes which he knows all the time are figments of a disordered brain. But it will plainly be perceived that this state materially influences the individual, who, though describing the hallucination, and averring a consciousness of its entire

tragical pathos, the big drops of sweat standing upon his forehead and tears of deepest sorrow rolling down his cheeks, the most humble acknowledgments are offered, and the most piteous appeals for a reconciliation and for the sparing of his life, are addressed to the generosity of his fancied enemies. During these scenes the individual will mostly retain his recollection of friends and acquaintances, though in these states of extreme excitement it will generally be difficult to divert his attention to other occurrences. Thus the case will go on, if not relieved, until the strength is exhausted, and from mere bodily inability the patient is forced to take his bed. His hallucination continuing, he gradually sinks, at length becomes comatose, and dies in a state of apoplectic stupor; or is at once thrown into an apoplectic convulsion, and finally sinks exhausted. While the patient is affected with delirium tremens sleep is impossible, and hence the main indication is to procure quiet sleep, or more properly to quiet the nervous irritation and excitement upon which the insomnia depends. This explanation of the phenomena of the disease, is the only rational one that can well be given. Procuring sleep with opium, if indeed this can be done, does not cure the disorder, nor calm the troubled mind of the suffering patient. But when the irritation is removed by appropriate stimulation sleep is at once restored, and frequently continues uninterrupted for a number of hours.

The *third* stage is characterized by an aggravation of the illusory fancies. The phantasms of the brain often become strangely mingled and exceedingly incoherent; or perhaps the patient sinks down into a low and unconscious muttering, with a highly excited and agitated state of the whole muscular system, and presents the appearance of exhaustion and delirium frequently attendant upon low forms of fever; the skin is cool, sometimes cold and moistened with a cold sweat; the pupils are contracted or greatly dilated, and fixed or insensible to light.

That modification of delirium tremens which comes on in the midst of a debauch, presents, in addition to the characteristic illusory fancies of the genuine disease, a more bloated appear-

Prognosis. Delirium tremens ought not to prove fatal. Long neglect under certain circumstances may place the most harmless disease beyond the reach of medication. So if a case of this affection is neglected or badly treated until a collapse and coma have taken place, we need not expect recovery. Delirium tremens may also be associated with some other disorder having an unfavorable tendency, and thus the two combined may prove fatal. But in almost any complication that can be readily imagined, not in itself too serious for relief, we should expect to have a favorable issue. Mild cases will generally recover without any treatment, though they may be slow and tedious.

The *anatomical* showings of delirium tremens coincide very remarkably with the functional character of the disease. The slight changes which have been observed in connection with the disease do not harmonize at all with the doctrine of inflammatory action or any other organic disorder of the brain. A slight increase in the natural moisture of the brain—in some instances being sufficient to constitute decided effusion—is sometimes found, though not so uniformly as to render this symptom pathognomonic, but rather an accidental concomitant, resulting from post mortem change, or from the protracted dissolution usual in such cases. But it is often one of the effusions that the general dropsical tendency, often following long continued habits of dissipation, has produced. I am, therefore, strongly inclined to place delirium tremens among the functional diseases of the nervous system.

Treatment. It is not a little remarkable that learned authors should, upon purely theoretical grounds, condemn a course of treatment which is abundantly confirmed by practical experience. Yet some of our most modern and popular works repudiate the stimulating treatment of delirium tremens, when it is altogether probable that the authors had never fairly tested it, and, of course, had never instituted a comparison between the results of that course, and the course which depends mainly upon opium and sedatives, or in fact any course that has ever heretofore been recommended. Experience has so fully determined this question, and, wherever

desired soporific influence is produced. Besides, its influence upon the disease is not at any time so apparent as to leave no doubt of its salutary operation, while in many instances the increase of the urgent symptoms becomes so apparent, during its exhibition, as to be conclusive in this respect ; and after a comparison of the two measures patients often become conscious of the difference, and object to the opium for fear of the results. It is, therefore, in view of all these considerations that I have not been in the habit of administering opium in any case of this disease.

In regard to the treatment of this disorder with stimulants a moral question is raised and urged with some force. I should be willing to recognize its validity and be governed by its precepts, if experience had not abundantly taught me that the whole argument is based upon mere theory, and has no practical foundation. However singular and contradictory it may seem, after the full effects of the stimulation are realized, and the nervous system is calmed down into a quiet condition, and after the restorative influence of a refreshing sleep has annihilated all the previous vagaries of the imagination, though patients recollect such fancies, and seem often distressed with their supposed reality, until they are informed of their error, they yet have no remembrance of having taken liquor during the paroxysm, and have no more demand for it at that time than though they had never taken it, and not so much as follows the effects of opium. It is unquestionably true that most confirmed inebriates ultimately perish from intemperance, and that individuals restored from the severest attacks of delirium tremens finally return to their old haunts and habits, and thus disappoint the expectations of their friends, and the most hopeful anticipations of their family connections. But I will hazard the opinion that not less do so of those who are treated with other measures, than of those who are treated with stimulants. Of all the cases of delirium tremens thus treated that have come under my observation, I have never yet found one that did not disavow any demand for liquor for some time after getting up, and in whom the determination was not apparently strong and sincere that he

and I, therefore, have no hesitation in giving that treatment the full influence of the most unqualified recommendation.

My uniform practice, in all cases of delirium tremens, has been to administer stimulants to the extent of calming the characteristic symptoms, and thereby inducing sleep. In order to secure the best effects, with entire safety to the patient, I generally begin with moderate doses and gradually increase till the effects are produced. I begin with table-spoonful doses of *best brandy*, in twice the quantity of hot water, with a little sugar, and repeat every hour, gradually increasing the amount of brandy to half a gill at a time. The quantity taken is not so material, but the effects upon the system must be carefully watched, and as soon as the patient gets to sleep he should be undisturbed and kept asleep, if possible, for a number of hours. But if he should not continue to sleep after the usual time for another dose, it should be repeated; or, what I think is better, after evidences of the quieting influence of the spirits upon the system begin to be manifested in a more calm and less talkative mood, and, perhaps, in a less horrified exhibition of the vagaries of the mind, or by a change of the scene to one of a more moderate character, a teaspoonful of ether, or Hoffman's anodyne, may be substituted for the brandy at every returning hour. This course seems to have the effect of diffusing the spirits upon the brain, and hastening the soothing influences of sleep. I have in several instances given a pint of the best pale brandy, and two ounces of Hoffman's anodyne, in ten or twelve hours, with the most complete and desirable results. Not the slightest evidence of intoxication, either directly or indirectly, has been witnessed, but a calm and refreshing sleep for six, eight, or ten hours, has always been induced, followed by the return of a perfectly quiet condition of all the natural faculties, and a demand for some light food. The patient will remember nothing which actually occurred during the paroxysm, but will put many anxious inquiries concerning the transactions which he supposes have taken place, of the illusory character of which, however, he will be easily satisfied.

to any reasonable demands, then agreeing to pay in money double the amount of any injury sustained; occasionally calling them by name, and beseeching an interview in open light, and then again pleading with a third party who, he said, was cognizant of the facts, to intercede and prevent the murder. But all was to no purpose; the plot thickened; the shadows upon the wall were his enemies coming out from their hiding places, and ready to pounce on him; he became more restless and excited, grasped his weapon with greater force, and placed himself in an attitude of defense. Fearful that he might be goaded to violence, I used every possible effort to convince him of his error, then vainly endeavored to persuade him to surrender the tongs to me that I might defend him, and at last was compelled to wrest them from him for my own personal safety. I shall never forget the earnest and beseeching expostulations which he addressed to me, with tears coursing down his cheeks, not to deprive him of his last and only weapon for the protection of his life. But at length he yielded the point, and the scene thereupon changed. His system began to feel the effects of a pint of pale brandy and an ounce or more of Hoffman's anodyne, which I had given him during the last ten hours. At this time the morning was near, and he was evidently becoming more composed, but imagined himself a mediator in a dueling affair, and was exercising all his skill to prevent an interview. The large chair was one of the parties to whom he was addressing himself, and I succeeded in diverting him for a moment by pointing out and moving the chair, so that he recognized and felt the ridiculousness of his grotesque mistake. Finally I prevailed upon him to take to his bed, and, as the influence of the treatment was rapidly increasing, he soon dropped to sleep, in which state he continued, with momentary interruptions only, for ten hours. When he awoke he was perfectly himself, calm and composed. But very soon I observed a gloom spreading over his countenance, and he inquired, in a most solemn and anxious tone, if I had heard of those fellows up street? "What fellows?" I asked, as if not understanding him. "Those fellows who have been watching to kill

applicable to other disorders. If the stomach should be found greatly deranged, whether accompanied by vomiting of vitiated secretions or not, a gentle emetic will be found to afford great relief to the symptoms attendant upon that derangement, and will aid in calming the nervous excitement. An infusion of *enpatorium perfoliatum* taken freely, will, in these cases, generally be sufficient. But if it should not act with the necessary efficiency, *lobelia* may be added. When there are evidences that inflammatory action in the membranes of the brain is complicated with the characteristic symptoms of delirium tremens, moderate purgatives and other revulsive measures should be efficiently applied. Cupping the temples and the head back of the ears, sinapisms to the feet, ankles, and back of the neck, and bathing the head with warm water, gently fanning to aid evaporation, should all be perseveringly made use of, and repeated in part or in full, as may be necessary. If effusion on the brain should be the complication, the *apocynum*, in sufficient doses to keep up a free action of the bowels, and also to stimulate the kidneys, together with revulsive measures, cupping, etc., are the most reliable remedies, though *digitalis*, iodide of potassa, squills, and other diuretic agents, may be found of service in such cases. If a morbid action in the lungs is the complication in the case, such of those measures as have heretofore been recommended for lung affections should be employed, as the extent of the disease and symptoms present may seem to require. But in these cases I have found from experience that to premise with a gentle emetic, and follow with quinine and iron, as in malarial affections, together with the brandy, is the most efficient course that can be pursued.

But, as I have before stated, whatever the complication, the characteristic illusions and other peculiar symptoms of delirium tremens will be readily recognized, and I have never witnessed any but favorable effects from the stimulating treatment in any of these cases in which I have known this course to be pursued. When the complication is one of a periodical character, as I have found it in a number of cases, the quinine and iron have not only arrested the periodical attach-

stage, in which the intellect is completely destroyed, is apt to be brought on more speedily. I have very often tested this by a simple experiment; a man who was confined to his bed by a straight jacket, or something of the kind, I have frequently directed to be dressed, have soothed him by conversation, and after requiring a promise that he would conduct himself with propriety, I have very seldom found reason to be dissatisfied with the result. On the contrary, the disease would almost invariably become milder, and the necessity of confinement cease. It is true that confinement is often necessary at night, from the impossibility of always providing a sufficient number of attendants. I therefore (with the exception just stated) allow the patient to have full liberty, the only restraint being the presence of the keeper: sometimes I also direct them to be set at work, which serves still farther to distract their attention.

“The proportional mortality under the two plans of treatment which I have detailed, is represented in the following summary, comprising the number of cases treated among the men for the space of five and one half years—that is, from the 20th of May, 1834, to the 13th of November 1839. The whole number of cases admitted for delirium tremens, or intemperance, which was expected to terminate in delirium tremens, was 1241. Of these, there were 1198 whites; and only 43 men of color. Of the whole number, 708 were decided cases of delirium tremens, 60 were slight cases and 430 cases of mere intemperance. Of the latter some terminated in decided delirium tremens and others proved fatal from diseases (such as pneumonia) contracted during the fit of drunkenness for which they had been sent to the lunatic asylum. Of the whole number, 121 cases proved fatal; that is, a fraction less than one in ten.

“In the first year—May, 1834, to May, 1835—the number of admissions was 141: of these, 18 died; that is, rather more than one in eight. In the second year the number of cases was 211, the deaths 24, or a little more than one in nine. The third year in 301 cases there were 47 deaths, a much larger proportion than in preceding years, one in 6½, but

was admitted in the third stage of the disease, and died in a few hours after his entrance; he had been treated with opium, and a box of pills which he was taking, were sent to the hospital with him. Of course, this apparent exception confirms the general conclusion, that the disease terminates favorably in every instance, when treated according to the method recommended.

“The proof must, therefore, be conclusive if all the circumstances surrounding the patient remain the same. These have remained precisely as they formerly were, with the exception of the difference in the management and treatment of the patients. The superintendent is the same, the resident physicians, in whose immediate charge the patients remain, are of the same average education and experience, and the other circumstances connected with the disease remain the same. The inference is, therefore, rigorously deduced, that the former method of treatment yielded an average mortality, which varied but little in different years; while the treatment now pursued, is followed by a mortality which may be regarded as a mere cypher. The single fatal case which has occurred among the list of 162 patients admitted, depending on other causes, and the progressive decline of the proportionate mortality keeping pace with the change of the treatment. If, therefore, evidence of this nature be rejected, or if the facts, which were not observed by one person alone, but by a large number, if a practice which was not carried out by a single resident physician, but by a succession of a large number, be rejected as wanting due confirmation, it is very clear, that the common rules of observation, and the conclusions which, under the ordinary circumstances, would be regarded as beyond cavil, must fail when applied to medicine. This, of course, involves a contradiction, that few would be willing to admit—at least, to avow.

“The treatment substituted for the former practice was conducted according to the following general plan:—If a patient entered in a state of intoxication, whether he was laboring under the early symptoms of delirium tremens or not, an emetic was always prescribed;—the best for this purpose is

excessive stimulation to which these patients have been long subjected is not only followed by a subsequent depression, but is attended with an extreme disorder of the nervous system, which constitutes the essential character of the disease. The stimulating practice relieves this instability for a time by substituting its own peculiar action and when administered in these doses, which are never sufficient to intoxicate, the subsequent depression may be completely avoided. Of course, no practitioner who feels a proper regard for his patient, or for his own character, would allow the patient or his friends to increase the quantity of alcoholic stimulants to such a degree as to run the slightest risk of producing these intoxicating effects. The quantity must vary according to the susceptibility of the patient; if this has been nearly destroyed by excesses, the quantity of alcohol which is necessary to produce a given effect must of course be greater than in those cases in which it is still but little impaired. The dose should always be as small as possible, for if the quantity necessary to tranquillize the patient be exceeded, it acts as an irritant, and produces injurious consequences.

“I am perfectly aware that the alcoholic stimulants are not absolutely necessary for the majority of cases of delirium tremens; a variety of methods will cure the disease, or it will in the greater number of cases get well of itself, like all diseases which have a self-limited duration. I wish merely to state what is incontestably proved by the documents, that the stimulant practice offers a successful result, which may be looked for with a certainty which is almost absolute, and that this method of treatment has the advantage of being applicable to the worst cases; in the milder ones the only question is, whether it unites the advantages of curing the patient ‘safely, quickly, and agreeably;’ of this no one who has witnessed the horrible sufferings of those who labor under delirium tremens, and their speedy alleviation by this treatment can entertain a doubt.

“The difficulty which will arise in the minds of many, is of a different kind: many physicians will hesitate on moral considerations, from a dread of either seeming to give coun-

LECTURE LXXIV.

NERVOUS DISEASES.—CONTINUED.

RHEUMATISM. *Preliminary remarks — Nature of rheumatism — Divisions — Acute — Description — Anatomy — Subacute rheumatism — Difference pointed out — Chronic rheumatism — Description — Nervous rheumatism — Description — Causes of rheumatism in general — Diagnosis — Prognosis — Treatment of different forms in order.*

The discussion of rheumatism in connection with nervous disorders will appear, to those who have been in the habit of considering it as an inflammatory disease of the fibrous structures, unnatural and out of place. But when the whole phenomena of the disease are carefully considered, and its character examined upon philosophical principles, it will be found so entirely incompatible with what is now recognized as the true doctrine of inflammatory disorders, and especially as applied to the structures referred to, that I apprehend the objection to the above arrangement will no longer be made. Inflammatory affections are not subject to the sudden and peculiar migratory movements that characterize rheumatic disorders, but when once located continue to the end of the attack. Rheumatism, on the contrary, may appear, one day, in one extremity, as the hand or foot, with great heat, redness, swelling, and severe pain; and perhaps the next day it will be found occupying the opposite extremity with equal violence, while it is nearly or quite gone from the point first attacked; and thus it goes on frequently changing, sometimes in a day, from one remote point of the system to another. In other instances, the disease presents an equally fluctuating course, changing about, without the least apparent cause, from

ACUTE RHEUMATISM. This form of disease sometimes comes on quite suddenly, after an exposure to wet and cold. But more frequently it is preceded by a chill, followed by fever. A stiffness is soon felt in the muscles, which rapidly increases until it presents the true character of *inflammatory rheumatism*. But more commonly still, it commences with a soreness and stiffness of the muscles, particularly in a portion of the extremities, though sometimes it is felt nearly equally over the whole system, but soon centers the more distinct appearance in one of the limbs, and sometimes in a single joint. It may thus continue for a few hours, or during the whole time, presenting every appearance of active inflammation, with great heat, redness, and swelling, with the most intense grinding or gnawing pain; and in the space of a few hours, all the active symptoms of the local disease may disappear at the point of its first invasion, and show themselves in a remote part of an opposite limb. In some instances it affects the joints of the fingers, particularly those next to the hands; but more commonly falls upon the larger joints, the wrists, elbows, or shoulders, or the ankles, knees, or hips. The swelling and soreness do not immediately subside upon the appearance of the disorder at another point, but the pain is generally gone, and with it the symptoms disappear as rapidly as the nature of the vital principle will admit of. In some instances, after having left a part, and appeared with great severity at another place, it returns to the original point, and thus goes through its course. In some cases it is confined to a single limb or joint; in others it affects nearly the whole system simultaneously, or starting at a single point, travels from place to place until the whole becomes affected. The force of the inflammation in some cases seems to be spent on the ligaments and tendons of a limb; while in others the synovial membrane is more especially the part affected. But in others, again, the fibers of the muscles, or the cellular structure connecting them, is more particularly involved. Wherever the acute form of this disease may be located, inability to move without great distress and suffering will be observed.

supposing that appearance did imply an inflammatory action, I still think the doctrine of primary nervous disorder, consisting of a high grade of irritation, if not positive inflammation, in the roots of the spinal nerves, furnishes a sufficient cause for the inflammatory symptoms that are found accompanying the disease. The same phenomena are presented in many cases of neuralgic affections, in which the original nervous character of the disease is not doubted. The effects of these local symptoms are more or less observable in the tissues involved in the reflected disease, and present no appearances different from the effects observed in other local inflammatory action. When the inflammation is located in the synovial membrane an increase in the synovial fluid will exist. Various degrees of thickening and adhesions will be found according as the inflammatory symptoms are more or less intense.

The *subacute* form of rheumatism differs mainly from the acute in that its symptoms are less violent, which, as in other diseases, is probably referable to the constitutions of the persons affected, and also to the character of the cause producing the attack. In this form the symptoms do not as suddenly appear, and the local effects are not as severe as in the acute. Though some swelling of the joints and parts affected will always be observed, yet it will not present so inflamed an appearance as in the more inflammatory variety, there being less redness and heat, as well as less tenderness and soreness upon handling. It is quite liable, like the acute, to sudden changes, and is more subject to involve the internal viscera, and thus develop, in systems predisposed to any local disorder, an attack of severe inflammation. There is scarcely any part or organ of the body that may not be thus affected, according as the predisposition is more strongly marked. The lungs, the brain, the heart, and particularly the bowels, are all subject to metastasis of subacute rheumatic disorder. So also the different muscles and tissues of the more external parts are all liable to be involved. The muscular and fibrous structures of the eyes, the muscles of the face, neck, and back, and also the abdominal and large lumbar muscles are

fever, or other symptoms of constitutional derangement. I should not consider this term applicable to any disease except neuralgic affections, if we did not occasionally meet with cases following the subacute form of rheumatism, or preceding it with the symptoms of neuralgia. I allude to it, at this time, more particularly to explain the division stated at the commencement of this lecture. This modification of the disease might, I think, be omitted with great propriety, and the cases classed in this connection would be fairly comprehended among those diseases dependent upon spinal irritation, making the distinction of acute rheumatism to depend upon inflammatory action in the nervous radicals, and that of neuralgia upon irritation.

Causes. It might have been more in accordance with the usual course to have considered the causes of the different modifications of rheumatic affections separately; but the causes of the acute and subacute must be considered essentially the same, and the chronic modification as resulting from the others; hence, a separate discussion of each would necessarily have involved a repetition, and I have, therefore, thought best to speak of them all at once. The most common exciting cause of rheumatism is exposure to cold, most frequently occurring during damp and changeable weather. It is not the ordinary exposure to extremes of cold that may be considered peculiarly the causes of rheumatism; but exposure to damp places, and particularly when the system is overheated; or the long continued and partial application of cold. Thus attacks of rheumatism frequently follow exposures to a draft of cool, moist air, or from lying upon the damp ground, and sleeping in newly plastered and damp houses. It should be remarked, however, that these causes do not invariably produce rheumatism, even when they operate to the fullest extent. It, therefore, follows that some other circumstances are necessary to its occurrence. But upon this subject no very well settled views are entertained. There can be little doubt that some peculiarity of the system is necessary to its occurrence. This condition has been called a rheumatic diathesis, a phrase which does not in the least relieve

internal organs—will also serve to distinguish the two affections.

Prognosis. In the absence of some unexpected sudden translation of the disease to a vital organ, by which patients are immediately involved in other and more serious complications, rheumatic affections of any form almost invariably recover. Different cases present great diversity in their grades of violence, and the severity of suffering, as well as the persistent character of the attack. But with all the differences that are found to exist, and even with the complications connected with them, rheumatic affections are almost always cured. Some, however, pass off imperfectly, and chronic disease follows, which is sometimes of a most deplorable character, little less to be coveted than death itself.

Treatment. The treatment of the different modifications of rheumatism is more diverse than the symptoms presented by each. I shall, therefore, consider the measures applicable to the different modifications separately, and in the order before named.

The views I have endeavored to inculcate in reference to the nature of acute rheumatism, have been more particularly suggested by experience in its treatment. For the last twenty years, no case of the acute affection has occurred in my practice, in which I was not able to detect a sensible tenderness in those portions of the spinal column, from which the nervous radicals proceed to be distributed to the parts involved in the disease, and in which the remedies, applied with reference to the local origin of the disease, did not manifest the most beneficial influence upon the reflected symptoms. My uniform practice has been to apply cups to the spine, and scarify the parts found to be tender, in severe cases; or if the case did not present an urgency sufficient to justify or require so active a measure, I have sometimes relied upon the application of a mustard poultice till it produced a sensible redness upon the surface, and repeated the sinapism at least once a day, and sometimes twice. But in the severest cases cups should not be dispensed with, even if scarification is not deemed best. I have in hundreds of cases witnessed immediate

Of this a small teaspoonful may be given every two hours, until it operates with sufficient freedom upon the bowels, so as to keep up a free discharge every day, or oftener if found necessary; or if it is found to operate with too much violence upon the bowels before the full influence of the medicine is experienced on the other symptoms of the disease, one grain of the sulphate of morphine may be added to the prescription. In many cases it will answer a still better purpose to administer at night before bed time ten grains of our diaphoretic powder, or three grains of equal parts of opium and ipecacuanha, and repeat in two hours, if necessary. This course will rarely fail to produce a moderate diaphoresis, as well as allay any general nervous excitement that usually accompanies the disease, and thereby secure a comfortable night's sleep—always desirable in any disease. The cups should be applied freely, and repeated if necessary. Local applications to the parts affected will be found of little value, either in relieving the suffering, or arresting the inflammation in the parts affected. Yet when considerable heat and redness existed, I have frequently applied a towel wet in moderately cold water, changed once in four or five hours, with decided advantage; hop fomentations will answer a similar purpose.

After the more inflammatory symptoms have been relieved with the measures I have suggested, or such of them as may be found necessary,—or for the treatment of the *subacute* form of the affection, which this stage of the acute form resembles, if the disease does not entirely subside, I would prescribe the following pill, recommended to me by a former pupil, (Dr. Geo. Ewing,) which he had used for a number of years with the most decided curative effects, with permanent counter-irritating action on the spine, and which I have seen followed by entire relief.

R. Inspissated juice of pokeberries (phytolac. dec.) dried
to an extract in the sun,
White pine pitch, (white turpentine) *aa* xx grs.
Macrotin, x grs.

Mix, and form into twenty pills, one of which may be given every four hours until the symptoms are relieved. In these

the watery portions are evaporated, which, with the warmth created, will most certainly produce a copious sweat. This may be continued for half an hour, when the patient should be thoroughly wiped off and rubbed with a dry flannel or crash towel, and put to bed. This, when preceded by the emetic and cupping, will rarely fail to relieve the present sufferings of the patient, and will be likely to have a favorable influence on the future course of the disease. Or if it is not thought best to use this "whisky sweat," after premising with the emetic and cupping, where a sudden exposure to cold was the cause, I have administered our sudorific tincture in warm balm or pennyroyal tea, in sufficient doses to produce a profuse sweat, which I have continued, with the aid of warm bricks, for a number of hours. With this course, when the attack was not sensibly modified by malarial influences, I have in many instances seen severe rheumatic affections immediately arrested, and patients restored after a very few days' confinement.

The *chronic* form of the affection will require a different course of treatment. In this modification, the reflected disease found in the extremities has long since become the paramount one, and in most cases the original irritation seated in the nervous radicals at or near the spinal marrow has disappeared, when little benefit may be expected from any local appliances to that part. The state of the general system, and the local disorder, wherever found, will furnish the main indications for treatment. The whole nervous system will be found more or less involved in these cases, partly growing out of the nature of the original disorder, and partly produced by the contaminated state of the general system from the want of the usual exercise and the attendant retention of stale matter in the system.

The first step in the treatment of chronic rheumatism is to ascertain whether the digestive and assimilative functions are performed with the regularity of health, and if not to apply those remedies best calculated to restore them. If, therefore, the tongue is coated, a mild emetic should first be administered. It will frequently be necessary to repeat the

also, in some cases found advantage from thoroughly steaming the parts by closely covering them over a tub of hot water, evaporated by the introduction of hot bricks, and, after that, rubbing as before, with slightly increased movements in the joints. When effusion within the capsular joints has taken place, if the measures I have directed fail to remove it, cups may be applied, a few teaspoonfuls of blood taken, a caustic issue produced a short distance from the part affected, and the whole joint freely rubbed with tincture of iodine, followed after each application by a tight roller.

In some instances the subacute form of rheumatic affections, either from neglect in applying appropriate treatment at an early day in its progress, or from the natural persistent character of the attack, presents a striking similarity to the true chronic disease; but will be found to retain some remnants of the original local nervous irritation in the roots of the spinal nerves. In these cases the main treatment applicable to the genuine chronic disease will be found equally appropriate; but to be equally effective will require some attention to the original seat of the affection. The irritating plaster, applied over the tender points found in the spine, allowed to remain until a free discharge takes place, and then removed, but again applied after it has healed, will rarely fail to afford relief in the case.

scarcely less important to the student of medicine than that of any other topic connected with disease. Scarcely an organ of the body can be named that is not by turns made the scapegoat upon which these great nervous centers play off their fantastic representations of serious organic or functional disturbances, and thereby mislead the unsuspecting attendant at the expense, to the patient, of a severe course of medication directed to a disease having its real seat far removed from the organ manifesting embarrassment and functional disturbance. Thus, organic affections of the heart have been so closely simulated, and the symptoms of disease of that organ have been so fully developed by disease of the spinal nerves, as to greatly embarrass the most careful observer, and render a solution of the difficulty only possible by a physical exploration, which modern science has taught us to make. Irregularity and palpitation of the heart, general nervous irritation, loss of appetite, with gastric derangement and debility, with all the attendant symptoms of cardiac affections, are produced by irritation of the spine, and promptly relieved by the measures adapted to that disease.

Thus, too, various forms of *pulmonary* disorders are so closely simulated by disease in the roots of the spinal nerves, readily recognized by pressure upon the vertebræ of the spinal column, as to leave no doubt of the fact. A troublesome, irritating cough, night sweats, rapid pulse, hurried respiration, and all the general leading symptoms of a rapid consumption, I have observed in numerous instances, but without the corresponding physical evidences of pulmonary disease, and, those symptoms having been associated with tenderness under pressure upon certain portions of the spinal column, no doubt was left that they had their origin from thence. In like manner, asthmatic symptoms are frequently produced, manifesting all the severity and urgency of the genuine disease, greatly aggravated by pressure over certain vertebræ of the dorsal portion of the spine, and promptly relieved by appropriate applications to the seat of the disorder. The same may be said of affections of the liver. Pain in the right side, extending to the shoulder, furred tongue, dyspeptic symp-

or of phlebitis—beyond what might grow out of the irritation referred to—as the true pathological character of this affection.

More than half the cases of chronic *laryngeal disease* that have come under my observation I have found originally referable to spinal disturbance, and no measures were so efficient in their cure as those directed to that cause of disease. Many cases of chronic ophthalmia have, also, been found perfectly intractable and unyielding under any course of medication I could devise, until measures were directed to the cervical vertebræ calculated to relieve the irritation there found in such cases. It may be asked what relation the eye holds to the nerves, either of the medulla oblongata or spinalis, and wherein the local inflammation of the eyes could be connected with irritation of the spine. I answer that, while the muscular nerves of the eyes have their origin directly from the anterior portion of the medulla oblongata, or top of the spinal marrow, the optic nerves, also, if they do not originate directly from the medulla oblongata, are yet so immediately connected with it as most sensibly to feel and respond to irritation there existing. A singularly interesting case, that occurred in my practice, is more than suggestive of the idea that not only the optic nerves, but, also, the nerves of all the other senses have their origin from that portion of the medullary tract. The case was this. During a protracted fever, a patient of mine was confined at about the seventh month of gestation, and delivered of twins. Both were alive, and both lived for some days. One was perfect in all its physical organs; but the other appeared to have no cerebrum, and there was a small opening through the scalp, at about the point for the anterior fontanel, into the longitudinal sinus, out of which a very slow but constant oozing of blood occurred, which no appliances were competent to arrest; and finally, after four or five days, the child became exhausted from the gradual loss of blood and died. It was a stronger and apparently more healthy child than the other, and in fact lived longer, notwithstanding the hemorrhage. It seemed to gaze about with an apparent gratification of its

of preventing unnecessary and often heroic medication in disorders where simple and mild measures are sufficient for the purpose, it becomes a matter of no small moment to form a correct

Diagnosis. Although the general nervous excitement and changeable character of the symptoms in diseases simulated by spinal disorders, would naturally suggest the true character of the case, yet they are not sufficiently diagnostic to be relied on for a course of treatment. The main reliance in arriving at a correct diagnosis of these cases is mostly of a negative character. The absence of the physical symptoms present in almost all organic affections, which a careful examination will rarely fail to detect, will be quite satisfactory and conclusive. Thus, in diseases of the respiratory organs, produced by spinal irritation, the absence of the physical symptoms, always more or less present in all organic affections of those organs, would be conclusive that the disease was not structural, but functional. But however conclusive you may think these circumstances to be, a careful examination of the spine by pressing upon each of the vertebræ; or, if the spinal column was found unusually stiff and unyielding, pressure made on each side of it, may thus more readily move the joints, and detect the tenderness existing at those places.

Treatment. Beside the indispensable local treatment for spinal irritation, most cases require some general measures. In regard to these, however, we should always be governed by the indications which the state of the general system presents. Such a course of general restoratives and tonics as the individual cases may require; the specific remedies that experience has taught us are best calculated to relieve the troublesome symptoms connected with the organ manifesting derangement; free bathing and friction, and such a course of general exercise as the condition and circumstances of the patient will justify; together with cupping the spine over the points found involved, and the application of the compound tar or irritating plaster to the spine, are, in general

as well as the vegetable bitters, combined with alkalies and gentle laxatives, I have found most admirable adjuncts ; but never yet did I succeed with these alone in curing any case of nervous or medullary irritation, which had advanced so far as to assume the character of any organic disease.

“The absorbent powers of the skin, and the influence of such absorption, even on the functions of the viscera, have been observed from the days of Hippocrates downward, and are so fully known and established as to require no argument from me to prove their existence. It may not, however, be inappropriate to produce here a few familiar examples of the fact.

“If garlic, onion, mint, or in short, any strong scented plant be handled, placed in contact with the soles of the feet, or rubbed smartly upon any part of the body, the effluvia of it will, in a very short time, be exhaled from the lungs by the breath, from the whole surface of the body by the perspiration, and be very perceptible in the odor of the urine. The same thing will happen even more rapidly with sulphur. There is not the slightest reason to suppose that these substances, or any of their component parts, are more readily absorbed by the skin than any other ; it is merely that their volatile aura renders their presence more distinct and undeniable. We know, in fact, that the skin is capable of absorbing so large a quantity of simple cold water, and directly conveying it to the circulating mass, that persons traveling, under the influence of raging thirst, have found that agonizing sensation in a great measure relieved by exposing their naked bodies to a hearty shower of rain.

“I sincerely hope, and believe, that the time is not far distant when such facts as these will be turned to the improvement of the curative art, more usefully and more extensively than they have ever hitherto been.

“While we keep the above remarks in view, let us recollect the very close connection and communion existing between the skin and the nervous system ; reverting at the same time to the fact, that the vascular and absorbent systems derive their energy from the nervous ; and we shall see

mis, while the antimony, penetrating the cutis, exerts its influence more directly upon the nervous and muscular tissues.

“My objection to its use arises from the capriciousness, as well as harshness, of its operation; the great and extremely irritating pain which it occasions, and the severe sickness of stomach consequent on its absorption into the system; often producing effects, in a delicate frame, hardly less distressing than the disease it was intended to remove. Moreover, in cases where I have found its application a complete failure, I have succeeded with what, *à priori*, appeared a much less efficient agent. Nor could I ascribe this altogether to idiosyncrasy; it rather seemed to me to arise from some, as yet, unexplained difference in the nature of nervous disorders.

“Ammoniacal liniments I have used extensively, and with the very best effects; yet they too have occasionally failed me; and they have this disadvantage, that, in cases where it is not desirable, they irritate the skin, and produce an eruption.

“To discover an external application which would stimulate, or, in fact, act as a tonic on the nervous system, without at the same time, being an irritant, has been for many years the object of my most anxious and indefatigable search. Within the last twelve months, I have seen reason to believe that I have succeeded in extracting such from a very simple substance; but the cases on which I have as yet tried it, though perfectly conclusive in themselves, do not, in my opinion, form a sufficient warrant for me, at present, laying it before the profession, or the public. Few things are more truly disgusting than the pompous fracas with which, in the present day, new remedies are thrust into notice, by persons whom the experience of others proves to have been actuated, in their reports of the extraordinary virtues of each successive trash, either by a blind enthusiasm, or by motives far less justifiable.

“Simple friction, even without any rubefacient, over the seat of the principal nervous centers, and over the whole thorax and abdomen, I have found of very important service, particularly in the earlier stages of nervous debility. But,

treated, were those which had been mercurialized previous to their coming under my care. Motives of delicacy towards others have induced me to suppress not a few of these, some of them of very recent occurrence.

“Excessive purgation is another measure which I have found very decidedly hurtful.

“If the bowels are loaded or more than commonly torpid, of course, they must be relieved, and completely cleared out; but instead of doing this by the more violent drastics, I would recommend moderate purgation joined to the daily use of Juke’s apparatus; and when the fecal matter lodged in the *prima viæ* is thus got rid of, very gentle laxatives, (such as will keep the bowels soluble, but not *purged*) is that practice which I have uniformly—particularly when I combined the laxative with extract of hyoscyamus—found most successful.

“The use of the Buxton baths I have found of the most indubitable efficacy, in every case in which I have had it in my power to send a patient to them. * * *

“Change of air and scene, particularly if it be to a very dry atmosphere, is a measure which ought never to be lost sight of in treating cases of nervous or spinal irritation. It is only when a very considerable advance towards a cure has been made, that the sea-side or sea-bathing is advisable. I have always found the greatest benefit accrue from having my patients as much in the open air as their strength will admit. The very utmost care, however, ought to be observed to prevent exercise ever being pushed the length of fatigue; because every time a person laboring under irritation of the spinal nerves is fatigued, he has lost just so much ground on the road to recovery. * * *

“To keep the mind in an easy and cheerful frame I have always found to be of the last consequence. Anxiety, deep thought, the indulgence of the angry passions, or habits of abstruse reasoning, are fatal barriers to a cure. Light reading, or any pursuit that occupies the attention without fatiguing the mind must be had recourse to; great judgment however is required in regulating this point; for what is abstruse study to one, is light and agreeable reading to another.

with his own ears, sees with his own eyes, and judges with perfectly unbiassed mind. * * That many in the profession will be found to cavil at the opinions I have advanced, and the facts I have adduced, I make little doubt; but conscious as I am of the strength of my general position, and of the purity of the motives which have induced me to lay the present work before the public, I shall endure, with great indifference, the ephemeral remarks and opinions of such persons. *Magna est veritas et prevalebit.*"

PARALYSIS, OR PALSY.

As my hour has not quite expired, and as this must be my last lecture, I propose to occupy the few remaining minutes by saying a few words upon one or two other nervous disorders, not pretending to be minute, or to even fully present all the *important* points connected with the subjects.

Paralysis may be *defined* to be a partial loss of sensation and motion. If it were an entire loss of both, it would necessarily be complete loss of vitality, and consequently death. It is often so nearly complete as to be inappreciable by any means we can use, yet it cannot be complete. In some instances, as from injury to the spinal nerves at the cervical vertebræ, palsy of all parts of the system below the injury, is produced, and constitutes what is termed *general* palsy. But the most common forms of paralytic affections are such as involve either one side of the whole system, including the face, tongue and extremities, which is called *hemiplegia*, or the lower part of the body from the hips down, constituting *paraplegia*. It is not uncommon, however, for a single limb or set of muscles of a certain part of the body to be affected, while the rest of the system is exempt. This is called *local* palsy.

The investigations of Sir Charles Bell and others have shown upon what the observations of the profession were founded, when the sensation of a portion of the system was lost, but the power of motion was still retained—which was called *partial* paralysis; and on the other hand, when the

to the brain or its manifestations. It should not be inferred, however, that there is not the most intimate relation between the brain and spinal nerves, and also between the manifestation of their several functions: sensation and motion, and mind. And it is not common for either to be involved in serious lesion without the other being affected.

General palsy, affecting the whole system, is very rare, except from injuries to the spine at the cervical vertebræ. An instance of the kind occurred in my practice, produced by a fall upon the back of the head, affecting the cervical nerves; and while all the mental powers were unembarrassed, as complete a loss of sensation and motion existed as was possible without the entire death of the whole system below. Not a finger, nor a muscle below the head would obey the will, nor was there a consciousness of any action in the involuntary muscles of the bowels or bladder, and the consciousness of a desire to evacuate those organs must have arisen entirely from the supposed necessity.

Hemiplegia most frequently follows apoplectic attacks, and no doubt the spinal nerves are involved in the same sanguineous engorgement or effusion which affects the brain. In some cases it begins at an extremity and gradually extends to the rest of the side. This, as before stated, is a palsy of one side, affecting usually one part of the tongue, the muscles of one side of the face, and all the muscles of both extremities on that side. The paralysis is generally more complete in the arm and hand than the foot and leg.

Paraplegia may be confined to the lower extremities, or it may extend further up the spine, and involve a part of the body. In this case the sphincter muscles of the bladder and bowels are more or less affected. This form of palsy sometimes results from direct injuries to the spine, or from disease in the spinal nerves. When it results from disease in the spine it mostly comes on gradually, commencing with a sense of numbness, or a tingling feeling in the extremities. But it gradually increases as the local difficulty becomes aggravated, until sensation and voluntary motion are nearly or entirely destroyed. If the spine above the sacral nerves is

the causes of palsy. Injuries of the spine, or whatever tends to produce serous or sanguineous effusion either in the substance of the spinal nerves, or within its membranes, may produce palsy; and I can scarcely doubt that, whether palsies be connected with disease of the brain, or are independent of it, except where it is the result of pressure from depression of some portions of the spinal column, the essential cause of them is effusion of a serous or sanguineous character, or sanguineous engorgement either in the spinal nerves, or the nerves having their origin from it.

Diagnosis. Very little difficulty will be experienced in recognizing the existence of palsy. If it be a general paralytic affection, besides the insensibility and want of muscular power in the system, the general appearance of the individual and the absence of any comatose or stupid condition will be sufficient to determine the case. The symptoms of the other forms of palsies are sufficient of themselves to settle the true character of the disorder.

Prognosis. A large majority of paralytic cases either entirely recover, or linger for some length of time, and finally die from disease of the brain. Palsies arising from extensive serous or sanguineous effusion are more likely to prove fatal than those occurring more suddenly, and in which a mere engorgement can be supposed to exist. Paralytic affections following inflammatory diseases are more likely to be connected with disorganization of the nervous structures, and are therefore less likely to recover.

Treatment. Few cases of palsy will be found in which either effusion or sanguineous engorgement in the spinal nerves do not exist, except those cases of a purely local character. Therefore the most important indications are to relieve this capillary congestion or engorgement, or promote the absorption of effusion that may exist in the spine; and, also, after these indications are fulfilled, to stimulate the nerves affected to a more sensible manifestation of their respective functions. To fulfill these several indications, measures both of a local and general character will be necessary. The first will be most promptly answered with cups

more moderately. As a substitute, the *rus toxicodendron* may be used. Galvanic currents and electric shocks should, at the same time, be applied, placing one pole of the battery on the spine, and the other on the nerves of the affected limbs, changing the position of the balls both on the spine and the limbs. When the patient has sufficiently recovered to bear the shower bath, it will often be found to have a very beneficial effect, not only on the general system, but also in exciting healthy action in the nerves of the parts affected. In paralytic affections of the bladder and kidneys, the tincture of cantharides and spirits of turpentine are the most appropriate, as heretofore stated.

The diet should, at first, be simple and mainly fluid. But after the symptoms of the most active stage have disappeared, the diet should then be more nourishing and substantial. As soon as patients have sufficiently recovered to admit of exercise in the open air, this will be found highly important to convalescence, and should be advised to the full extent of the patient's ability to bear it without too much fatigue. Riding and walking should be practiced as regularly as the ability and circumstances will permit.

HYDROPHOBIA.

Very little of a practical character can be said with any great confidence on the subject of hydrophobia, and I have no time to spare in discussing the various theories connected with it, but refer you to any respectable author, who will give you the stereotyped theories which are as old as the disease. I cannot, however, permit the present occasion to pass without endeavoring to perpetuate the few practical items, in regard to this disease, which I have gathered in my experience, and thus put in the possession of others what I have reason to hope and believe may be demonstrated to be a remedy for this hitherto most frightful and fatal disorder.

I need scarcely say to you that the whole catalogue of narcotic, stimulant, antispasmodic, and sedative therapeutic measures have been rigorously tested in the treatment of this

He passed on to the next farm-house, where he bit other animals, and so on for some miles before he was killed. All the animals that he was known to have bitten had the disease. As it was not known nor suspected that the dog was mad till the family learned he had been shot, it was three days before they became alarmed. I was called to see the patient, and found that the animal's tooth had gone into the naked wrist. I immediately cupped and cauterized it, and gave the anagalis, or red checkweed, according to the directions. Soon after taking the first dose she began to perspire, and continued in a profuse sweat, which had an offensive odor for the two or three days that she took the medicine. The wound healed up, and she had no symptoms of hydrophobia.

A farmer, six miles from town, was bitten on his leg by his own dog. His tooth went deeply into the flesh, and made quite a lacerated wound, but it did not bleed. Not then suspecting that the dog was mad, he gave the wound no attention at that time. But the next day the dog, showing symptoms of madness, was tied up, and by the next day manifested most indubitable evidences of hydrophobia, got loose, left the premises, and bit a number of other animals, all of which, so far as was known, went mad. The third day after the bite the farmer came to town to consult me. I cupped and cauterized as for the other case, and gave him the anagalis. I did not see him again for some weeks. But he afterward informed me that while he took the medicine, he perspired so profusely as to wet his clothes as though they had been dipped in water, and the perspiration was exceedingly offensive. He got well, and is still living, some ten years having elapsed since the occurrence.

The medicine is directed to be prepared by boiling about four ounces of the dried plant in two quarts of strong beer or ale until it is half evaporated or boiled away. Press out the liquid and strain it, and add to the liquid thus prepared two drachms of tincture of opium. By an adult, in ordinary cases, the medicine should be taken in half gill doses every morning for three mornings. If symptoms of the disease have begun to be manifest, patients must take more; or if

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ERRATA.

- Page 89, line 9 from top, read "antiperiodic" for "antispasmodic."
Page 140, line 10 from top, read "podophyllum" for "podophyllin."
Page 203, line 5 from top, read "insufficient" for "inefficient."
Page 208, line 19 from bottom, strike out "not."
Page 249, line 13 from bottom, read "formation" for "foam."
Page 536, bottom line, strike out "young."
Page 556, top line, the sentence should read—"But the bronchial tubes are
the most common source of hemorrhage in the affection" etc.
Page 557, line 5 from bottom, read "diffluent" for "different."
Page 620, line 7 from top, read "pericardial" for "periodical."
Page 623, line 10 from top, read "drummy" for "drumming."
Page 641, line 11 from bottom, read "and" for "in."
Page 762, line 2 from top, read "acrid" for "acid."
Page 803, line 14 from top, read "epileptic" for "apoplectic."

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